
CANCER INCIDENCE AND MORTALITY IN MASSACHUSETTS 2006 – 2010:

STATEWIDE REPORT

Office of Data Management and Outcomes Assessment

Massachusetts Department of Public Health

August 2014



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STATEWIDE REPORT

Deval L. Patrick, Governor
John W. Polanowicz, Secretary of Health and Human Services
Cheryl Bartlett, Commissioner of Public Health

Thomas Land, Director, Office of Data Management and Outcomes Assessment
Susan T. Gershman, Director, Massachusetts Cancer Registry, Office of Data Management
and Outcomes Assessment

Massachusetts Department of Public Health

August 2014

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Massachusetts Cancer Registry Staff

Susan T. Gershman, MS, MPH, PhD, CTR, <i>Director</i>	
Bruce Caldwell, <i>Research Analyst/Geocoder</i>	Jeremiah Nesser, <i>Technical Assistant to Non-Hospital Reporting</i>
Nancy Donovan, MA, CTR, <i>Cancer Registrar</i>	Jayne Nussdorfer, CTR, <i>Cancer Registrar</i>
Patricia J. Drew, CTR, <i>Cancer Registrar/Quality Assurance Coordinator</i>	Barbara J. Rhodes, CMA, CTR, <i>Cancer Registrar/Death Clearance Coordinator</i>
Loi Huynh, <i>Software Developer</i>	Pamela Shuttle, CTR, RHIT, <i>Cancer Registrar/Non-Hospital Reporting Coordinator</i>
Richard Knowlton, MS, <i>Epidemiologist</i>	Hung Tran, <i>Software Developer</i>
Ann MacMillan, MPH, <i>Epidemiologist</i>	
Mary Mroszczyk, CTR, <i>Geocoding/ Special Projects Coordinator</i>	

Massachusetts Cancer Registry Advisory Committee

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Joanna Haas, MD	Ingrid Stendhal, CTR
Carol Lowenstein, CTR. MBA	Susan Sturgeon, DrPH, MPH
Reggie Mead	Carol Rowan-West, MPH
Gail Merriam, MSW, MPH	

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For further information, please contact the following:

Massachusetts Cancer Registry.....	(617) 624-5642
Research and Epidemiology.....	(617) 624-5635
Occupational Health Surveillance.....	(617) 624-5626
Bureau of Environmental Health.....	(617) 624-5757
Cancer Prevention and Control Initiative.....	(617) 624-5484
Massachusetts Department of Public Health website.....	www.mass.gov/dph

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EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

Cancer Incidence and Mortality in Massachusetts, 2006-2010: Statewide Report presents cancer incidence and mortality data for the Commonwealth from 2006 through 2010. The report includes numbers and rates for 24 types of cancer, information on age-specific patterns, a discussion of cancer trends, an examination of patterns by race/ethnicity, and a comparison of Massachusetts and national cancer rates. Data are provided on invasive cancers only, with the exceptions of urinary bladder (which includes *in situ* and invasive cancers combined) and *in situ* breast cancer.

All counts and average annual age-adjusted rates presented in this Executive Summary are for the period 2006-2010 and are for Massachusetts residents, unless otherwise stated.

OVERALL

- Total number of new cases – 184,212, an average of 36,842 annually
- Total number of cancer deaths – 66,961, an average of 13,392 annually
- Incidence rate for all cancers combined for total population – 508.8 per 100,000 persons
- Mortality rate for all cancer deaths combined for total population – 178.0 per 100,000 persons.

MOST COMMON NEWLY DIAGNOSED TYPES, AND CAUSES OF CANCER DEATH BY SEX

Incidence (newly diagnosed cases)

- Males – *prostate cancer* accounted for 28.1% of all newly diagnosed cancers among males
- Females – *invasive breast cancer* accounted for 28.6% of all newly diagnosed cancers among females.

Mortality (causes of cancer death)

- Males – *cancer of the bronchus and lung* accounted for 27.9% of all cancer deaths among males
- Females – *cancer of the bronchus and lung* accounted for 26.8% of all cancer deaths among females.

TRENDS 2006-2010

Statistically Significant Incidence Trends – Males

- All cancers combined decreased 3.5% per year.
- Bronchus and lung cancer decreased 2.9% per year.
- Colon and rectum cancer decreased 5.9% per year.
- Melanoma of skin decreased by 6.0% per year.
- Prostate cancer decreased by 5.7% per year.
- Urinary bladder cancer decreased 3.6% per year

Statistically Significant Mortality Trends – Males

- All cancers deaths combined decreased 2.4% per year.
- Bronchus and lung cancer decreased 1.9% per year.
- Kidney & renal pelvis cancer deaths decreased 7.1% per year.

- Liver and intrahepatic bile duct cancer deaths increased 5.9% per year.

Statistically Significant Incidence Trends – Females

- Colon and rectum cancer decreased 3.7% per year.
- Melanoma of skin decreased 2.8% per year.

Statistically Significant Mortality Trends – Females

- Liver and intrahepatic bile duct cancer deaths increased 6.5% per year.

RATES BY RACE/ETHNICITY (*Unless otherwise noted, the term ‘racial/ethnic groups’ in this report refers to white non-Hispanic, black non-Hispanic, Asian non-Hispanic and Hispanic*).

Males Incidence

- Black, non-Hispanic males had the highest total age-adjusted incidence rates, significantly higher than those of all other racial/ethnic groups.
- Cancers of prostate, bronchus and lung, and colon/rectum were top 3 types in each racial/ethnic group.

Males Mortality

- Black non-Hispanic males had the highest mortality rates, significantly higher compared to Asian, non-Hispanics and Hispanics, but not significantly elevated when compared to white, non-Hispanics.
- Cancers of the bronchus and lung was the leading cause of cancer death for each racial/ethnic group.

Females Incidence

- White, non-Hispanic women had the highest total age-adjusted incidence rates, significantly higher than those of all other racial/ethnic groups.
- Breast cancer was the most commonly diagnosed cancer for each racial/ethnic group.

Females Mortality

- Black non-Hispanic women had the highest mortality rates, significantly higher than for Asian non-Hispanics and Hispanics, but not for white non-Hispanics.
- Cancer of the bronchus and lung was the leading cause of cancer death among all racial/ethnic groups except for black, non-Hispanic, whose leading cause of death was breast cancer.

MASSACHUSETTS VS. NATIONAL RATES

Males and Females Incidence

- Overall age-adjusted incidence rates in Massachusetts were significantly higher than national rates for both males and females.

	Massachusetts	U.S.
Males	577.8 per 100,000	542.3 per 100,000
Females	463.9 per 100,000	418.8 per 100,000

Males and Females Mortality

Overall age-adjusted mortality rates in Massachusetts were significantly higher than national rates for both males and females.

Males and Females Mortality (continued)

Massachusetts

U.S.

Males	218.9 per 100,000	215.3 per 100,000
Females	151.9 per 100,000	149.7 per 100,000

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INTRODUCTION

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INTRODUCTION

The Massachusetts Cancer Registry (MCR) collects reports of newly diagnosed cases of cancer and routinely compiles summaries of cancer incidence and mortality data. This report, *Cancer Incidence and Mortality in Massachusetts: Statewide Report*, is produced annually with the most recently available statewide data. Another report, *Cancer Incidence in Massachusetts: City and Town Supplement*, is also produced annually and contains information for the 351 cities and towns in Massachusetts. Electronic versions of these reports may be found on the internet at www.mass.gov/dph/mcr.

Overall Content

This report:

- Provides statewide information on cancer incidence and mortality in Massachusetts for twenty-four types of cancer and for all cancers combined for 2006 through 2010;*
- Provides detailed information on the most commonly occurring types of cancer for 2006 through 2010;
- Examines cancer incidence patterns by age, sex, and race/ethnicity;
- Reviews Massachusetts cancer incidence and mortality trends for 2006 through 2010; and
- Compares Massachusetts incidence and mortality data with respective national data.

The report is organized into the following sections:

- **METHODS** which provides a detailed explanation of the data collection, data processing, and statistical techniques employed in this report and a discussion of the limitations to consider when reviewing the data.
- **OVERVIEW** which provides a summary of cancer incidence and mortality data in Massachusetts from 2006 through 2010, including leading types of cancer, cancer incidence by age and sex, cancer trends, cancer patterns by race/ethnicity, and a comparison of rates for Massachusetts with those for the U.S.
- **FIGURES & TABLES** which present cancer incidence and mortality data for 24 types of cancer for 2006-2010. There are 6 figures and 24 tables in this section with breakdowns by sex, race/ethnicity, year, age group, state and national comparisons, and cancer type.
- **APPENDICES** which provide information supplemental to this report, including a listing of codes used to prepare the report, information on population and rate changes, and population estimates.
- **REFERENCES**

**The Massachusetts incidence data in this report include only invasive cancers for 22 of the 24 types of cancer. Cancer of the urinary bladder includes both in situ and invasive cases. Cancer of the breast in situ is presented as a separate category, but is not included in the “all sites combined” data.*

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METHODS

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METHODS

Data Sources

Cancer Incidence

The MCR collects reports of newly diagnosed cancer cases from health care facilities and practitioners throughout Massachusetts. Facilities that reported the 2006-2010 diagnoses that comprise this report include 69 Massachusetts acute care hospitals, 5 radiation/oncology centers, 2 endoscopy centers, 2 surgical centers, 10 independent laboratories, 3 medical practice associations, and approximately 500 private practice physicians. The MCR signed the modified National Data Exchange Agreement on March 28, 2013. This is a single agreement that allows participating states to exchange data on cases diagnosed or treated in other areas. Together with states participating in the agreement, and states with individual agreements, the MCR now has reciprocal reporting agreements with 24 states to obtain data on Massachusetts residents diagnosed out of state (see section “Border Areas and Neighboring States” on page 15 for a listing of states currently participating in this data exchange). Currently the MCR collects information on *in situ* and invasive cancers and benign tumors of the brain and associated tissues. The MCR does not collect information on basal and squamous cell carcinomas of the skin.

The MCR also collects information from reporting hospitals on cases diagnosed and treated in staff physician offices when this information is available. Not all hospitals report this type of case, however, some hospitals report such cases as if the patients had been diagnosed and treated by the hospital directly. Collecting these types of data makes the MCR’s overall case ascertainment more complete. Some cancer types that may be reported to the MCR in this manner are melanoma, prostate, colon/rectum, and oral cancers.

In addition, the MCR identifies previously unreported cancer cases through review of death certificate data to further improve case completeness. This process is referred to as death clearance and identifies cancers mentioned on death certificates that were not previously reported to the MCR. In some instances, the MCR obtains additional information on these cases through follow-up activities with hospitals, nursing homes, hospice residences, and physicians’ offices. In other instances, a cancer-related cause of death recorded on a Massachusetts death certificate is the only source of information for a cancer case. Thus these “death certificate only” cancer diagnoses are poorly documented and have not been confirmed by review of clinical and pathological information. Such cases are included in this report, but they comprise less than 3% of all cancer cases.

All case reports that provided the basis for this report were coded following the *International Classification of Diseases for Oncology, Third Edition* (ICD-O-3), which was implemented in North America with cases diagnosed as of January 1, 2001. (1)

Each year, the North American Association of Central Cancer Registries (NAACCR) reviews cancer registry data for quality, completeness, and timeliness. The NAACCR certification results for the MCR for diagnosis years 2006-2010 are presented in Table A. For 2006-2010, the MCR’s annual case count was estimated by NAACCR to be more than 95% complete for each year. The MCR has achieved the gold standard for this certification element as well as for six other certification elements for each case year since 1997. (See Table A.)

The Massachusetts cancer cases presented in this report are primary cases of cancer diagnosed among Massachusetts residents during 2006-2010 and reported to the MCR as of March 13, 2014. These data included some additional cases diagnosed in 2006-2009 that were not counted in the previous report, *Cancer Incidence and Mortality in Massachusetts 2005-2009: Statewide Report* because they were reported to the MCR too late to be incorporated in that report.

Cancer sites/types are grouped according to coding definitions adapted from the National Cancer Institute (NCI)'s Surveillance, Epidemiology and End Results (SEER) Program (Appendix I). The Massachusetts data presented are invasive cancers, with the exception of urinary bladder and breast cancer. Both *in situ* and invasive cancers are presented for these sites. (See section 'Definition of Cancer Sites' on page 16 for additional information about the urinary bladder category.) *In situ* cancers are neoplasms diagnosed at the earliest stage, before they have spread; they are limited to a small number of cells and have not invaded the organ itself. Invasive cancers have spread beyond the layer of cells where they started and have the potential to spread to other parts of the body. Typically, published incidence rates do not combine invasive and *in situ* cancers due to differences in the biologic significance, survival prognosis, and types of treatment of the tumors. Because a substantial number of breast cancers are diagnosed at a pre-invasive (*in situ*) stage, we present an additional category for these data that is separate from the invasive breast cancer data. The *in situ* breast cancer cases are not included in the totals for all cancer sites combined. Due to the specific nature of the diagnostic techniques and treatment patterns for bladder cancer, *in situ* and invasive cancers of the urinary bladder are combined and *in situ* urinary bladder cases are included in the totals for all cancer sites combined.

The national incidence data for comparison are from NAACCR. The NAACCR incidence rates are for the period 2006-2010 and include data from all 50 states, Puerto Rico, and Washington, D.C. (2)

Cancer Mortality

The Massachusetts death data were obtained from the Massachusetts Registry of Vital Records and Statistics, which has legal responsibility for collecting reports of deaths in this state. Death reports from 2006 to 2010 were coded using the *International Classification of Diseases, Tenth Revision* (ICD-10). (3) The cancer site/type groups for deaths in this report were based on cancer site/type categories from the NCI's SEER Program (Appendix I). These SEER cancer site/type definitions are the standard categories commonly used by cancer registries. The cancer mortality data published in this report may differ slightly from the cancer mortality data published in *Massachusetts Deaths*, the annual Massachusetts Department of Public Health mortality surveillance publication because *Massachusetts Deaths* uses cancer site/type groupings from the National Center for Health Statistics.

In this report, 2006-2010 Massachusetts cancer mortality trends and average annual age-adjusted rates were compared with 2006-2010 U.S. trends and average annual age-adjusted rates. All national mortality data used in this report were from the CDC's National Center for Health Statistics (NCHS). Two publications using NCHS data were referenced in this report. Data on mortality trends were taken from the 'Annual Report to the Nation on the Status of Cancer, 1975-2010'. (4) The source of the national average annual age-adjusted mortality rates was the North American Association of Central Cancer Registries (NAACCR) report 'Cancer in North America' (CINA).

Definitions

Population Estimates

All of the population estimates used in this report were produced by the National Center for Health Statistics in collaboration with the U.S. Census Bureau's Population Estimation program. The NCHS

reallocates the multiple race categories from the Census Bureau population estimates file to create four mutually exclusive race categories that are consistent with the race categories used to collect cancer incidence and cancer mortality data. The population data used in this report for the calculation of rates are presented in Appendix III.

Race/Ethnicity

The MCR uses an algorithm developed by NAACCR called the NAACCR Hispanic Identification Algorithm (NHIA) to help classify Hispanic ethnicity. The algorithm is only applied to cases with an unknown Spanish/Hispanic origin or cases that have been classified as Hispanic based on a Spanish surname only. The algorithm uses last name, maiden name, birthplace, race, and sex to determine the ethnicity of these cases.

The race/ethnicity categories presented in this report are mutually exclusive. Cases and deaths are only included in one race/ethnicity category. The race/ethnicity tables include the categories white, non-Hispanic; black, non-Hispanic; Asian, non-Hispanic; and Hispanic. The total population in Massachusetts also includes unknown races/ethnicities and Native Americans. As a result, the number of cases for the total population is not the sum of cases by race/ethnicity presented in the tables.

Statistical Terms

- *Age-Specific Rates* – Age-specific rates were calculated by dividing the number of people in an age group who were diagnosed with cancer or died of cancer in a given time frame by the number of people in that same age group overall in that time frame. They are presented as rates per 100,000 residents and are site- and sex-specific.
- *Age-Adjusted Rates* – An age-adjusted incidence or mortality rate is a weighted average of the age-specific rates, where the weights are the proportions of persons in the corresponding age groups of a standard population. The potential confounding effect of age is eliminated when comparing age-adjusted rates for populations with different age structures. The 2000 U.S. Census Bureau population distribution was used as the standard. Rates were age-adjusted using eighteen 5-year age groups. Age-adjusted rates can only be compared if they are adjusted to the same standard population. It is also important to note that differences in methodologies used in calculating rates, such as a number of age groups used, may cause slight variations in results.
- *Confidence Intervals (CI) or Confidence Limits (CL)* – The confidence interval (CI) – also called a confidence limit (CL) – is a range of values determined by the degree of variability of the data within which the true value should lie. The 95% confidence intervals presented in this report indicate that 95 times out of 100 this range of values will contain the true one. The confidence interval indicates the precision of the rate calculation; the wider the interval, the less certain the rate. Statistically, the width of the interval reflects the size of the population and the number of events; smaller populations and smaller number of cases yield less precise estimates that have wider confidence intervals. The overlap of confidence intervals was used in the report as a conservative statistical test to estimate the difference between the age-adjusted incidence or mortality rates with the probability of error of 5% or less ($p \leq 0.05$). A change is reported as significant when the confidence intervals around the two rates being compared do not overlap. Rates and confidence intervals were not calculated when there were fewer than 20 cases for the five-year study period.

- *Annual Percent Change (APC)* – The APC is a statistical method for trend analysis. It shows how much a cancer rate has increased or decreased over the observed period of time. This estimation assumes that the change in incidence or mortality rates is constant during the observed time period. The APC for a short time period (2006-2010 for this report) was calculated using the SEER method. The $APC = 100 * (e^m - 1)$, where m is a slope of the linear regression line, which is an approximation of the function of the natural logarithm of the rates by the year of diagnosis. (5) A positive APC corresponds to an increasing trend, while a negative APC corresponds to a decreasing trend. All of the APC values calculated in this report were statistically tested for significance ($p \leq 0.05$) using the t-test against the hypothesis that they are equal to zero (the rate is neither increasing nor decreasing)
- *Median Age at Diagnosis* – The median age at diagnosis is the point (in age) where half of cancer cases occurred below this age and half of cases occurred above this age.

Interpreting the Data

When interpreting cancer incidence and mortality data in this report, it is important to consider the following:

Border Areas and Neighboring States

Some areas of Massachusetts appear to have low cancer incidence, but this may be due to loss of Massachusetts resident cases who are diagnosed in neighboring or other states and not reported to the MCR. The MCR has reciprocal reporting agreements with the following 24 states: Alabama, Alaska, Arkansas, Connecticut, Florida, Idaho, Kentucky, Maine, Michigan, Mississippi, Montana, New Hampshire, New York, North Carolina, North Dakota, Oklahoma, Rhode Island, South Carolina, Texas, Utah, Vermont, Virginia, Wisconsin, and Wyoming. There is also an agreement with Puerto Rico.

Cases Diagnosed in Non-Hospital Settings

During the time period covered by this report, the MCR's primary information source for most newly diagnosed cases of cancer was hospitals. In addition the MCR collected information from reporting hospitals on cases diagnosed and treated in staff physician offices, when this information was available. Other reporting sources include dermatologists and dermatopathology laboratories, urologists' offices and a general laboratory. Some types of cancer in this report may be under-reported because they are diagnosed primarily by private physicians, private laboratories, health maintenance organizations, radiotherapy centers that escape identification systems used by hospitals. The most common types of cancer diagnosed or treated outside of the hospital include melanoma and prostate cancer. The exact extent of this under-reporting has not been determined, but cases included in this report represent the great majority of cases statewide and provide an essential basis for evaluating statewide cancer incidence patterns.

Definition of Cancer Sites

Reports published by the MCR since 2004 use a definition of urinary bladder that includes both *in situ* and invasive cancers. Prior reports included only invasive cases in the urinary bladder category. This change was made to conform to the definitions of the NCI's SEER Program. The addition of *in situ* cases in this category has elevated both the number of cases and rates for this site and for all sites combined compared with reports published prior to 2004. The first statewide report to use this expanded definition was *Cancer Incidence and Mortality in Massachusetts 1997-2001: Statewide Report*.

Trends

Trend data also should be interpreted with caution. Apparent increases or decreases in cancer incidence over time may reflect changes in diagnostic methods or case reporting rather than true changes in cancer occurrence. Also, cancer incidence trends may appear more favorable than they actually are because they have not been adjusted for reporting error or delay. (6) The MCR continues to receive case reports on an ongoing basis even after the data are released. These delayed case reports, as well as corrections to cases based on subsequent details from the reporting facilities, result in reporting delay and data changes; thus, the more recent diagnosis years may be less complete and accurate than the earlier diagnosis years. Finally, the following should be considered when interpreting trend data:

- The APC assumes that the change in rate is the same over the entire time period examined, which may or may not be true for the trends examined in this report.
- If the percent difference in rates between the years 2006 and 2010 is small, the statistical significance of the APC may have no practical importance.

Race/Ethnicity

Race/ethnicity data for cancer cases are based on information in the medical record. These data for cancer deaths are based on information from death certificates as reported by next-of-kin and funeral directors. Errors in these source documents may lead to incorrect classification of race/ethnicity. Also, completeness of the race/ethnicity data may vary for cancer cases and cancer deaths. Some race/ethnicity categories may be under-reported; thus, counts and rates may under-represent the true incidence of cancer in these populations.

National Data Comparisons:

Age-adjusted incidence and mortality rates in Massachusetts were compared with national rates as shown in Table 24 of this report. As mentioned in the section on data sources, the national incidence data are from the North American Association of Central Cancer Registries and the death data are from the CDC's National Center for Health Statistics. It is important to interpret these data comparisons cautiously. Cancer rates may be affected by differences in the racial/ethnic composition of the population, in population estimates used for rate calculations, in the prevalence of cancer risk factors, and in cancer screening rates. Thus, cancer rates in Massachusetts and NAACCR areas or the United States may differ because of one or more of these variations.

Table A.
North American Association of Central Cancer Registries (NAACCR) Certification Results
for the Massachusetts Cancer Registry (MCR), 2006-2010

Registry Element	Gold Standard	Silver Standard	MCR Results By Year					Standard Achieved
			2006	2007	2008	2009	2010	
Completeness of case ascertainment §	95%	90%	95%	>95%	>95%	>95%	>95%	Gold
Unknown “age at diagnosis”	≤2%	≤3%	0.0%	0.0%	0.0%	0.0%	0.0%	Gold
Unknown “sex”	≤2%	≤3%	0.0%	0.0%	0.0%	0.0%	0.0%	Gold
Unknown “race”	≤3%	≤5%	1.5%	1.5%	0.9%	2.9%	1.2%	Gold
“Death certificate only” cases †	≤3%	≤5%	1.9%	1.6%	2.8%	3.1%	2.1%	Gold
Duplicate primary cases	≤0.1%	≤0.2%	0.02%	0.02%	0.0%	0.02%	0.01%	Gold
Timeliness	Data submitted within 23 months of close of calendar year.							Gold

§ Completeness of case ascertainment was estimated by methods from the NAACCR.

† “Death certificate only” cases are cases that are identified through the death certificate clearance process and only have information from a death certificate.

OVERVIEW

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OVERVIEW

From 2006 through 2010, there were 184,212¹ newly diagnosed cases of cancer in Massachusetts residents – 91,727 in males and 92,478 in females. On average, 36,842 new cancer cases were diagnosed annually during this time period. For all types of cancer combined, the average annual age-adjusted incidence rate was 577.8 cases per 100,000 among males and 463.9 cases per 100,000 among females.

During the same time period, there were 66,961 deaths due to cancer – 33,812 males and 33,149 females for an average of 13,392 total cancer deaths annually. For all cancer sites combined, the age-adjusted mortality rate was 218.9 deaths per 100,000 among males and 151.9 deaths per 100,000 among females.

Leading Types of Cancer

Incidence

Males

The most commonly diagnosed type of cancer in Massachusetts males from 2006-2010 was prostate cancer, followed by cancers of the bronchus and lung, colon/rectum, and urinary bladder. These four cancer types comprised approximately 57% of newly diagnosed cases. Prostate cancer alone comprised approximately 28% of all male incident cases (Figure 1).

From 2006-2010, the age-adjusted incidence rates for these four leading types of cancer were 156.8 cases per 100,000 for prostate, 79.5 cases per 100,000 for bronchus and lung, 50.8 cases per 100,000 for colon/rectum cancer, and 44.4 cases per 100,000 for urinary bladder. Other leading cancer types for males included melanoma, non-Hodgkin lymphoma, cancer of the kidney and renal pelvis, cancer of the oral cavity and pharynx, leukemia, and pancreatic cancer (Figure 2).

Females

Among Massachusetts females, the most commonly diagnosed cancer types were cancers of the breast, bronchus and lung, colon/rectum, and corpus uteri (uterus), representing approximately 58% of new cancer cases diagnosed during 2006-2010. Invasive breast cancer alone comprised nearly 29% of all female incident cases (Figure 1).

From 2006-2010, the age-adjusted incidence rates for these four leading types of cancer were 134.8 cases per 100,000 for breast, 64.7 cases per 100,000 for bronchus and lung, 39.2 cases per 100,000 for colon/rectum cancer, and 30.1 cases per 100,000 for the uterus. Other leading cancer types for females included thyroid cancer, melanoma, non-Hodgkin lymphoma, ovarian cancer, urinary bladder cancer, and pancreatic cancer (Figure 2).

¹ The male and female case counts will not add up to the total case count because the MCR collects two additional sex/gender classifications (transsexuals and persons with sex chromosome abnormalities/hermaphrodites).

Cancer Incidence Patterns by Age

Although rates for ages 0-4 are higher than 5-9 and 10-14, the likelihood of being diagnosed with cancer increased steadily with age for most cancers. The age-specific incidence rate for all sites combined for males rose from 25.3 per 100,000 in the age group 0-4 to 3,321.1 per 100,000 in the age group 80-84 (Table 1). For females, the age-specific rate for all sites combined increased from 24.2 per 100,000 for ages 0-4 to 2,238.1 per 100,000 for ages 80-84 (Table 2). The cancer incidence rate for people aged 85 and above declined for both males and females (Tables 1 and 2).

The median age of diagnosis for all cancers combined was 67 years for males and 66 years for females (Tables 1 and 2). For many of the cancer types presented in this report, the median age at diagnosis was age 60 or older. The following cancers were diagnosed at a younger median age (males and females are combined for cancers occurring in both sexes): brain and other nervous system (median age – 58), breast *in situ* (median age – 56), cervix (median age – 50), Hodgkin lymphoma (median age – 40), testis (median age – 35), and thyroid (median age – 50) (Tables 1-3).

Mortality

Males

Cancer of the bronchus and lung was the leading cause of cancer death for Massachusetts males from 2006 to 2010, accounting for 28% of all cancer deaths in males. Prostate cancer ranked second in mortality. The third and fourth most common causes of cancer death were cancers of the colon/rectum and pancreas, respectively. These four types of cancer comprised 52% of all cancer deaths for this time period (Figure 3).

From 2006 to 2010, the age-adjusted mortality rates for the four leading causes of cancer death in males were 61.0 deaths per 100,000 for cancer of the bronchus and lung, 22.2 deaths per 100,000 for prostate cancer, 18.5 deaths per 100,000 for colorectal cancer, and 12.8 deaths per 100,000 for pancreatic cancer. Other leading causes of cancer death for males during this time period included leukemia, cancer of the liver and intrahepatic bile ducts, urinary bladder, esophagus, non-Hodgkin lymphoma, and cancer of the brain and other nervous system (Figure 4).

Females

Cancer of the bronchus and lung was also the leading cause of cancer death for Massachusetts females from 2006 to 2010. Bronchus and lung cancer accounted for approximately 27% of all cancer deaths in females. Breast cancer ranked second in mortality for females. The third and fourth most common causes of cancer death were cancers of the colon/rectum and pancreas, respectively. These four types of cancer comprised 57% of all cancer deaths for this time period (Figure 3).

From 2006 to 2010, the age-adjusted mortality rates for these four leading causes of cancer death were 41.9 deaths per 100,000 for bronchus and lung, 21.1 deaths per 100,000 for breast, 13.0 deaths per 100,000 for colon/rectum, and 10.2 deaths per 100,000 for pancreas. Other leading causes of cancer death among females during this time period included ovarian cancer, leukemia, non-Hodgkin lymphoma, cancers of the uterus, brain and other nervous system, and liver and intrahepatic bile ducts (Figure 4).

Cancer Trends

Incidence

All of the data describing increasing and decreasing trends are based upon the annual percent change (APC) methodology. From 2006 through 2010, overall cancer incidence in Massachusetts males declined 3.5% per year, a statistically significant change. For state females, overall cancer incidence decreased 1.3% per year, but this decrease was not statistically significant. Nationally during 2006-2010, cancer incidence rates for all cancer sites combined decreased by 1.8% per year for males and by 0.3% per year for females, both decreases being statistically significant. (4) Incidence trends for the leading cancers affecting Massachusetts males and females are discussed below and are shown in Figures 5 and 6. Tables 4, 5, and 6 present age-adjusted incidence rates by diagnosis year for males, females and both sexes, respectively.

Males

Among Massachusetts males between 2006 and 2010, the incidence rate of prostate cancer decreased by 5.7% per year, a statistically significant decrease (Figure 5). The incidence rate of prostate cancer declined from 172.4 cases per 100,000 males in 2006 to 139.7 cases per 100,000 males in 2010 (Table 4). Nationally, the incidence of prostate cancer showed a significant decrease of 5.2% per year from 2006-2010. The decrease in prostate cancer incidence is likely related to declines in prostate specific antigen (PSA) testing. In 2008, the US Preventive Services Task Force recommended against prostate cancer screening for men aged 75 and older resulting in lower screening and detection of early stage prostate cancer. While not presented by stage at diagnosis in this state report, national rates for all men from 2009-2010 demonstrated a decrease in the incidence of local stage prostate cancers, a stabilization of incidence of regional prostate cancers and an increase in the incidence of late stage prostate cancers. (4)

In Massachusetts, the age- adjusted incidence rate of cancer of the bronchus and lung in males declined by 2.9% per year between 2006 and 2010, a statistically significant decline (Figure 5). The incidence rate for cancer of the bronchus and lung fell from 83.3 cases per 100,000 males in 2006 to 73.4 cases per 100,000 in 2010 (Table 4). Nationally, the incidence rates for male cancer of the lung and bronchus also declined significantly by 3.2% per year from 2006-2010, a reflection of long-term reduction in smoking prevalence (4).

The incidence rate of colorectal cancer in Massachusetts males decreased from 57.6 in 2006 to 44.6 cases per 100,000 in 2010. The estimated annual percent decrease was 5.9% and was statistically significant (Figure 5). National data show that colorectal cancer incidence rates in males decreased significantly by 4.5% per year from 2006-2010. (4)

In addition to the trends mentioned above, urinary bladder cancer showed a significant decrease of 3.6% between 2006 and 2010. The incidence rate for male urinary bladder cancer fell from 47.1 per 100,000 males in 2006 to 40.2 cases per 100,000 in 2010 (Table 4).

No cancer types showed a significant increase from 2006 - 2010 among males in Massachusetts. Nationally, the following cancers increased significantly from 2006-2010: melanoma of the skin (1.6%), pancreas (0.7%), liver (3.9%) and thyroid (6.3%). (4)

Females

Invasive breast cancer incidence in Massachusetts females showed a non-significant decrease of 0.1% annually during the period 2006-2010 (Figure 6). The incidence rate decreased from 132.7 cases per

100,000 females in 2006 to 129.9 cases per 100,000 in 2010 (Table 5). For the period 2006-2010, national breast cancer incidence rates also remained stable.

The incidence rate of cancer of the bronchus and lung among Massachusetts females decreased non-significantly by 0.9% per year between 2006 and 2010. The rate declined from 65.5 cases per 100,000 females in 2006 to 62.4 cases per 100,000 in 2010 (Table 5). The national rate of bronchus and lung cancer among females decreased significantly by 1.8% per year from 2006-2010, a reflection of the reduction in smoking prevalence in women. (4)

The incidence rate of colorectal cancer, which is the third most common cancer among Massachusetts females, decreased significantly by 3.7 % per year from 2006- 2010. The rate declined from 41.8 per 100,000 in 2006 to 35.7 per 100,000 in 2010. Nationally, the rates for colorectal cancer also decreased significantly by 4.0% per year from 2006-2010. This national decrease is most likely attributable to significant improvements in colorectal cancer screening which can prevent cancer development through the removal of precancerous polyps. (4)

The annual incidence rate for uterine cancer, the fourth most commonly diagnosed cancer among Massachusetts women, showed a non-significant decrease of 2.1 % annually over the period 2006 to 2010 (Figure 6). Nationally, the rates for uterine cancer increased significantly by 1.1% per year from 2006-2010. (4)

Among Massachusetts females, thyroid cancer incidence rates increased non-significantly by 1.5% per year from 2006-2010. Nationally, the rates for thyroid cancer in females increased significantly by 5.1% per year from 2006-2010 (4). While the 2006-2010 rates for Massachusetts were significantly higher than the national rates (27.9/100,000 vs. 18.5/100,000) (Table 24), the rates for Massachusetts females did not increase significantly. This was the first five-year period since 1994-1998 without a significant increase in female thyroid cancer rates.

In addition to the trends mentioned above, incidence rates of melanoma of skin decreased significantly in Massachusetts women for 2006-2010 (2.8% per year). Nationally, melanoma of skin incidence rates increased significantly by 1.4% annually from 2006 to 2010 (4). Melanoma may be diagnosed and treated in non-hospital settings. Despite efforts to obtain reports on diagnoses from dermatologists and dermatopathology labs, melanoma may still be underreported in Massachusetts and may explain some of the decreasing trend.

Liver cancer incidence rates increased non-significantly by 1.8 % per year from 2006-2010. Nationally, rates for liver cancer increased significantly for females by 3.4% from 2006-2010 (4). The increase in liver cancer incidence can be explained in part by increases in chronic hepatitis B and hepatitis C infections which lead to liver cancer. These infections account for an estimated 78% of liver cancer worldwide, and many of the estimated 3.8-5.3 million persons living with chronic viral hepatitis in the United States are unaware of their infection. (7)

Mortality

From 2006 to 2010, overall cancer mortality decreased statistically significantly by 2.4% per year for Massachusetts males and non-significantly by 1.2 % per year for females (Figures 5 and 6). Recent national data for all cancer sites combined for 2006-2010 showed statistically significant declines in mortality rates of 1.8% per year for men and 1.4% per year for women. (4)

Males

Among Massachusetts males, mortality from bronchus and lung, prostate, and colorectal cancers all decreased for 2006 to 2010, with bronchus and lung cancer showing the only statistically significant decline. Deaths due to prostate cancer decreased 1.9% per year; cancer of the bronchus and lung, 1.9% per year; and colorectal cancer, 2.2 % per year. Additionally, deaths from kidney and renal pelvis cancer decreased significantly by 7.1% per year and deaths from liver cancer increased significantly (5.9%) (Figure 5). Nationally, deaths from multiple cancers decreased significantly from 2006-2010 including prostate (3.4%), stomach (3.2%), non-Hodgkin lymphoma (2.6%), colon/rectum (3.0%), larynx (2.7%), bronchus and lung (2.8%), oral and pharynx (1.3%), myeloma (1.4%), and leukemia (1.0%). (4) There was also a significant increase in liver cancer deaths nationally among males (2.6%). (4) It should be noted that since there are much larger numbers of deaths nationally compared to Massachusetts, there is more statistical power and a greater likelihood for a trend to be significant.

Females

Among Massachusetts females, mortality rates for cancers of the bronchus and lung and breast declined 0.2% and 1.0% per year from 2006 to 2010, respectively, although neither decline was statistically significant. The female colorectal cancer mortality rate declined non-significantly by 1.3% per year. Similar to males, liver cancer rates increased statistically significantly by 6.5% annually. Nationally, deaths from various cancers showed statistically significant declines from 2006-2010 including stomach (2.7%), colon/rectum (3.0%), ovarian (1.8%), myeloma (2.3%) cervical (1.8%), oral and pharynx (1.5%), esophagus (1.5%), leukemia (1.0%), kidney/renal pelvis (1.3%), breast (2.0%), brain and central nervous system (0.5%) and lung and bronchus (1.5%). Nationally, there was also a significant increase in liver cancer deaths among females (2.2%). (4)

It is important to note that the Massachusetts mortality rates for most cancers with significant increases or decreases are low (Tables 7 and 8). As a result, the statistical significance of APC for these sites may have no practical public health importance.

Cancer Patterns by Race/Ethnicity

Incidence

Table 10 presents the five leading cancers (based on age-adjusted rates) occurring among Massachusetts residents by race/ethnicity and sex for 2006-2010. Tables 11, 12, and 13 show the distribution of cases by cancer type for all races combined and by race/ethnicity for males, females, and both sexes for the same period. Age-adjusted rates and respective 95% confidence intervals or limits (95% CL) for all races combined and by race/ethnicity, cancer type, and sex are presented in Tables 14, 15, and 16. (See the Methods section of this report for more information about confidence intervals.)

Overall, of the total 184,212 newly diagnosed cancer cases during 2006-2010, 163,938 (89.0%) occurred in white, non-Hispanics, 7,720 (4.2%) in black, non-Hispanics, 3,787 (2.1%) in Asian, non-Hispanics, and 5,588 (3.0%) in Hispanics (Table 13). Of the remaining cases, 165 (0.1%) occurred in American Indians and 3,014 (1.6%) occurred in those whose race/ethnicity was unknown.

Males

Based on age-adjusted rates, the rankings of the most common types of cancer among Massachusetts males by race/ethnicity (as shown in Table 10) are as follows:

- Prostate cancer: First among all racial/ethnic groups.
- Lung cancer: Second among all racial/ethnic groups.
- Colorectal cancer: Third among all racial/ethnic groups.
- Urinary bladder cancer: Fourth among white, non-Hispanic and black, non-Hispanic men and fifth among Hispanic men;
- Liver cancer: Fourth among Asian, non-Hispanic and Hispanic men.
- Melanoma: Fifth among white, non-Hispanic men.
- Kidney cancer: Fifth among black, non-Hispanic men.
- Stomach cancer: Fifth among Asian, non-Hispanic men.

From 2006 through 2010, black, non-Hispanic males had the highest incidence rate of all cancer types combined (632.4 per 100,000), significantly higher than the rates for all other male racial/ethnic groups (Table 14). Asian non-Hispanic males had the significantly lowest incidence rate of all sites combined (338.4 per 100,000). Black non-Hispanic males had a significantly elevated rate of prostate cancer (249.6 per 100,000) when compared to the rates for the other racial/ethnic groups. Nationally, prostate cancer incidence rates decreased significantly by 2.6% from 2001-2010 among black, non-Hispanic males. The 2001-2010 national incidence rates, however, still remained 60% higher than that of white, non-Hispanic males (220.0 vs. 136.6 per 100,000). (4) Asian, non-Hispanic men in Massachusetts had a significantly higher rate of liver cancer compared with the other groups, nearly three-fold higher than white non-Hispanic men. Nationally, the rate for liver cancer among Asians from 2001-2010 was approximately double that of white, non-Hispanics (21.3 vs. 9.6 per 100,000). (4) It is believed that much of this increase is due to chronic hepatitis B infection acquired through maternal transmission. This disproportionately affects East Asians, with prevalence figures among those screened in New York City varying from 4.6% among those born in South Korea to 21.4% among those born in China. (8)

Females

Based on age-adjusted rates, the most common types of cancer diagnosed among Massachusetts females (as shown in Table 10) include:

- Breast cancer: First among women of all racial/ethnic groups.
- Lung cancer: Second among, white, non-Hispanic and black, non-Hispanic women; third among Hispanic women, fourth among Asian, non-Hispanic women.
- Colorectal cancer: Second among Asian, non-Hispanic and Hispanic women; third among white, non-Hispanic and black, non-Hispanic women.
- Uterine cancer: Fourth among white, non-Hispanic, women, fifth among black, non-Hispanic, Asian non-Hispanic and Hispanic women.
- Thyroid cancer: Third among Asian, non-Hispanic women; fourth among black non-Hispanic and Hispanic women; fifth among white non-Hispanic women.

During 2006-2010 white, non-Hispanic females had the highest incidence rate of all cancer types combined (475.4 per 100,000) among all racial/ethnic groups (Table 15). This rate was significantly higher than the rates for the other female groups. Asian, non-Hispanic females had an incidence rate for all sites

combined (307.1 per 100,000) which was significantly lower than the rate for white and black, non-Hispanics (475.4 and 403.6 per 100,000, respectively). The rates of invasive breast and lung cancer were statistically significantly higher for white, non-Hispanic females—139.8 and 68.3 cases per 100,000, respectively—than for the other racial/ethnic groups. The breast cancer *in situ* incidence rate was also statistically significantly higher among white, non-Hispanic females (48.4 cases per 100,000) than among the other racial/ethnic groups (Table 15).

Mortality

Table 17 presents the five leading causes of cancer mortality among Massachusetts residents by race/ethnicity and sex. The number of cancer-related deaths, age-adjusted mortality rates, and 95% confidence intervals by cancer type, race/ethnicity, and sex are presented in Tables 18 through 23.

Of the 66,961 deaths from cancer from 2006 through 2010, 61,587 (92.0%) occurred among white, non-Hispanics, 2589 (3.9%) among black, non-Hispanics, 882 (1.3%) among Asian, non-Hispanics, and 1358 (2.0%) among Hispanics (Table 20). Death rates were comparable in both white, non-Hispanic and black, non-Hispanic populations and both were significantly higher than the other two racial/ethnic groups for most cancer sites (Table 23), which is consistent with national data for 2001-2010. (4)

Males

Based on age-adjusted rates, rankings of the five most common causes of cancer deaths among Massachusetts males (as shown in Table 17) are:

- Lung Cancer: First among men of all racial/ethnic groups.
- Prostate cancer: Second among white, non-Hispanic, black, non-Hispanic, and Hispanic men; fourth among Asian, non-Hispanic men.
- Liver cancer: Second among Asian, non-Hispanic men; third among Hispanic men; fourth among black, non-Hispanic men.
- Colorectal cancer: Third among white, non-Hispanic, black, non-Hispanic, and Asian, non-Hispanic men; fourth among Hispanic men.
- Pancreatic cancer: Fourth among white, non-Hispanic men; fifth among black, non-Hispanic and Hispanic men.
- Stomach cancer: Fifth among Asian, non-Hispanic men.
- Leukemia: Fifth among white, non-Hispanic men.

For all types of cancer deaths combined for 2006-2010, black, non-Hispanic males had the highest age-adjusted mortality rate (237.3 deaths per 100,000 males), significantly higher than the rates for Asian, non-Hispanic and Hispanic males, but not white, non-Hispanic males (Table 21). Compared with white, non-Hispanics, black, non-Hispanic males also had 1.6 to 2.0 times significantly higher mortality rates for the following cancers:

- Liver cancer (8.6 per 100,000 vs. 14.0 per 100,000)
- Multiple myeloma (4.4 per 100,000 vs. 7.6 per 100,000)
- Prostate cancer (22.0 per 100,000 vs. 43.5 per 100,000) and
- Stomach cancer (4.7 per 100,000 vs. 9.1 per 100,000).

Mortality data were limited for both Asian, non-Hispanic and Hispanic males due to small numbers, but Asian, non-Hispanic males had the highest mortality rate of cancer of the liver and intrahepatic bile ducts,

18.4 per 100,000 (Table 21). This rate was significantly higher than that for white, non-Hispanic males and Hispanics, but not for black non-Hispanic males.

Females

The five most common causes of cancer deaths among Massachusetts females based on age-adjusted rates (as shown in Table 17) are:

- Lung cancer: First among white, non-Hispanic, Asian, non-Hispanic, and Hispanic women; second among black, non-Hispanic women.
- Breast cancer: First among black, non-Hispanic women; second among white, non-Hispanic women; third among Hispanic and Asian, non-Hispanic women.
- Colorectal cancer: Second among Hispanic and Asian, non-Hispanic women; third among white, non-Hispanic and black, non-Hispanic women.
- Pancreatic cancer: Fourth among white, non-Hispanic, black, non-Hispanic and Hispanic women; fifth among Asian, non-Hispanic women.
- Ovarian cancer: Fifth among white, non-Hispanic women.
- Uterine cancer: Fifth among black, non-Hispanic women.
- Liver cancer: Fourth among Asian, non-Hispanic women.
- Leukemia: Fifth among Hispanic women.

For all types of cancer deaths combined during 2006-2010, white, non-Hispanic females had the highest age-adjusted mortality rate among females, with 155.7 deaths per 100,000 females (Table 22). This rate was statistically significantly elevated compared with the rates for Asian, non-Hispanic females and Hispanic females, but not black, non-Hispanic females. When comparing female white, non-Hispanic mortality rates with black, non-Hispanic rates, statistically significant differences were evident for the following cancers:

- Breast cancer (21.4 per 100,000 vs. 26.2 per 100,000);
- Lung cancer (44.4 per 100,000 vs. 24.5 per 100,000);
- Uterine cancer (4.1 per 100,000 vs. 7.0 per 100,000);
- Multiple myeloma (2.4 per 100,000 vs. 5.6 per 100,000);
- Ovarian cancer (8.4 per 100,000 vs. 5.2 per 100,000);and
- Stomach cancer (2.2 per 100,000 vs. 4.9 per 100,000)

Massachusetts and U.S. Comparisons

Age-adjusted incidence and mortality rates in Massachusetts are compared with national rates in Table 24. The national incidence data are from the North American Association of Central Cancer Registries (2) and the mortality data are from CDC's National Center for Health Statistics (NCHS). (9) It is important to interpret these data cautiously. Cancer rates may be affected by differences in the racial/ethnic composition of the population, in population estimates, in the prevalence of cancer risk factors, and/or in cancer screening rates. Cancer rates in Massachusetts and NAACCR areas or the United States may differ because of these variations. For example, the 2006-2010 racial/ethnic population of Massachusetts differed from that included in the NAACCR data. Appendix IV presents a detailed breakdown of the racial/ethnic population for each. One notable difference is that white, non-Hispanics in Massachusetts comprised 80% of the state's total population compared with 66% for states represented by the NAACCR data. The NAACCR incidence data represent 93% of the U.S. population, including 93% of whites, 92% of blacks, 95% of Asian/Pacific

Islanders, and 96% of Hispanics/Latinos. (2) The national mortality data cover the entire United States population. For this section, both Massachusetts and national incidence and mortality data cover the period 2006-2010.

Incidence

For all cancer sites combined, the age-adjusted incidence rates were statistically significantly higher for Massachusetts females than for females in the NAACCR areas (463.9 vs. 418.8 per 100,000 respectively); the rates for Massachusetts males were also higher (577.8 vs. 542.3 per 100,000) (Table 24). For males, the incidence rates in Massachusetts were statistically significantly higher than the incidence rates in the NAACCR areas for the following cancers: brain and other nervous system, esophageal, Hodgkin lymphoma, kidney, liver, melanoma of skin, non-Hodgkin lymphoma, prostate, stomach, testicular, thyroid, and urinary bladder. Among females, brain and other nervous system, breast (invasive and *in situ*), lung, uterine cancer, esophageal, Hodgkin lymphoma, liver, melanoma, non-Hodgkin lymphoma, oral cavity and pharynx, pancreatic, thyroid, and urinary bladder cancer rates were statistically significantly elevated compared with NAACCR incidence rates. Two types of cancer, colorectal among Massachusetts males, and cervical among Massachusetts females, had significantly lower incidence rates compared with NAACCR data.

Mortality

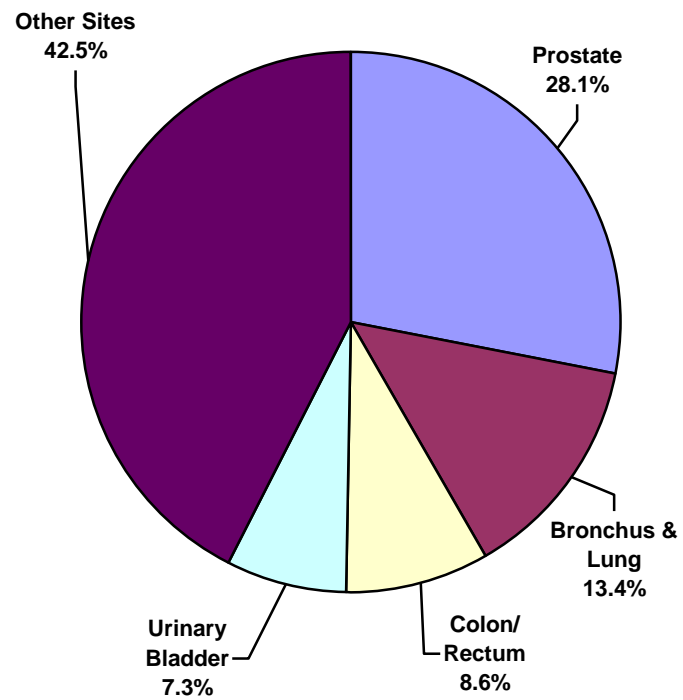
For males, the age-adjusted mortality rate in Massachusetts was statistically significantly higher than the age-adjusted mortality rate in the United States for all cancer sites combined, 218.9 versus 215.3 per 100,000 males (Table 25). Among Massachusetts males, mortality rates for the following cancers were significantly higher when compared with U.S. males: esophageal, liver, and urinary bladder, while the lung and colorectal cancer mortality rates were significantly lower. Among Massachusetts females, the age-adjusted mortality rate for all cancer sites combined was significantly elevated compared with U.S. females (151.9 versus 149.71 per 100,000) (Table 25). Other cancers that were significantly elevated among Massachusetts females were lung, esophageal, liver, pancreas, urinary bladder and melanoma of the skin, while cervical, breast, and colorectal cancer mortality rates were statistically significantly lower than U.S. rates.

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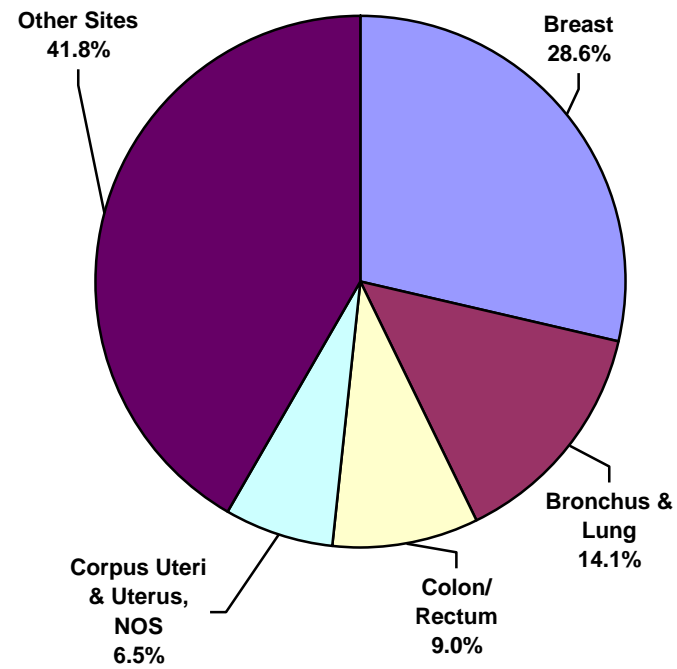
FIGURES & TABLES

Figure 1.
PERCENTAGE OF CANCER INCIDENT CASES BY CANCER TYPE AND SEX
Massachusetts, 2006-2010

MALES (N=91,727)

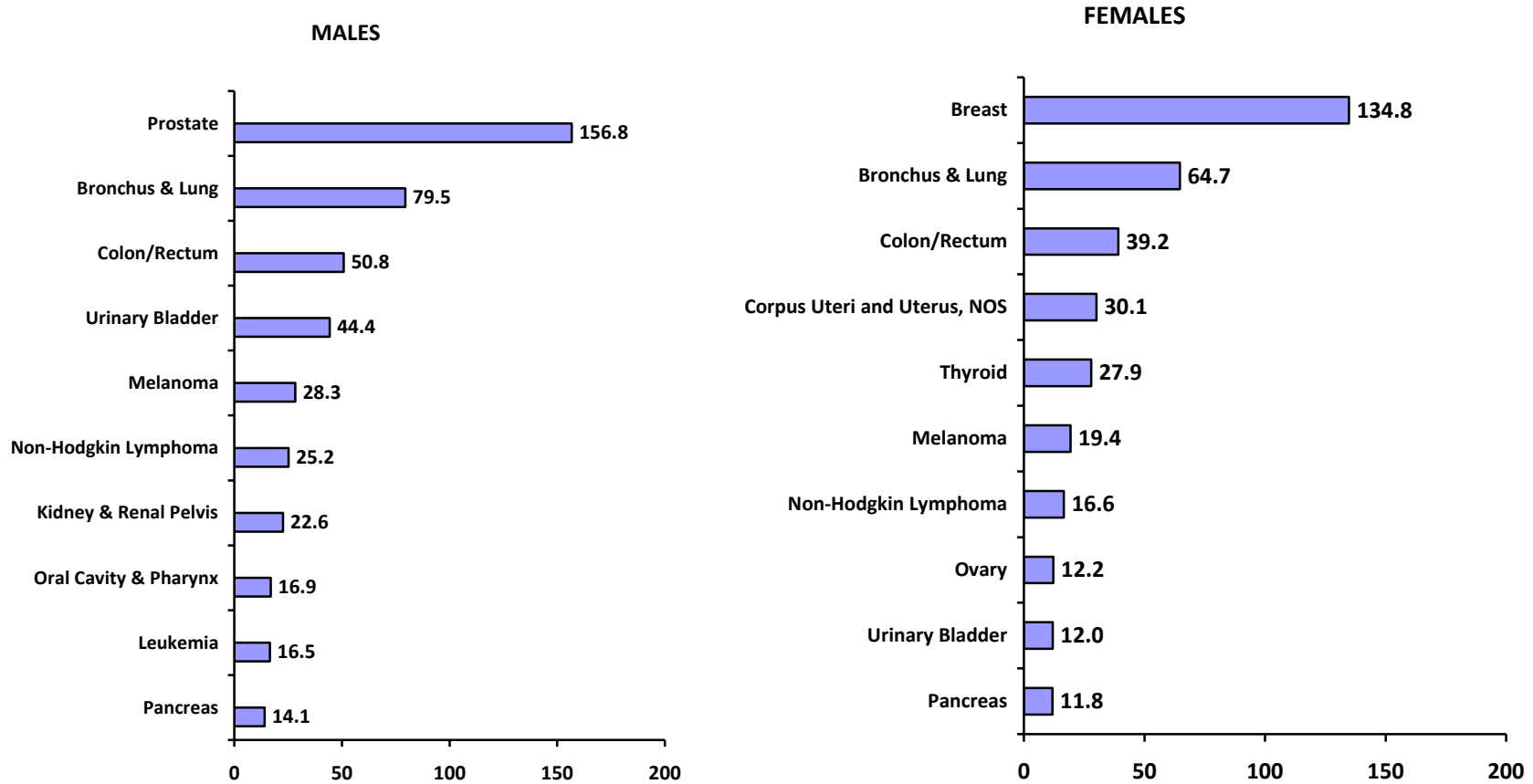


FEMALES (N=92,478)



Source: Massachusetts Cancer Registry

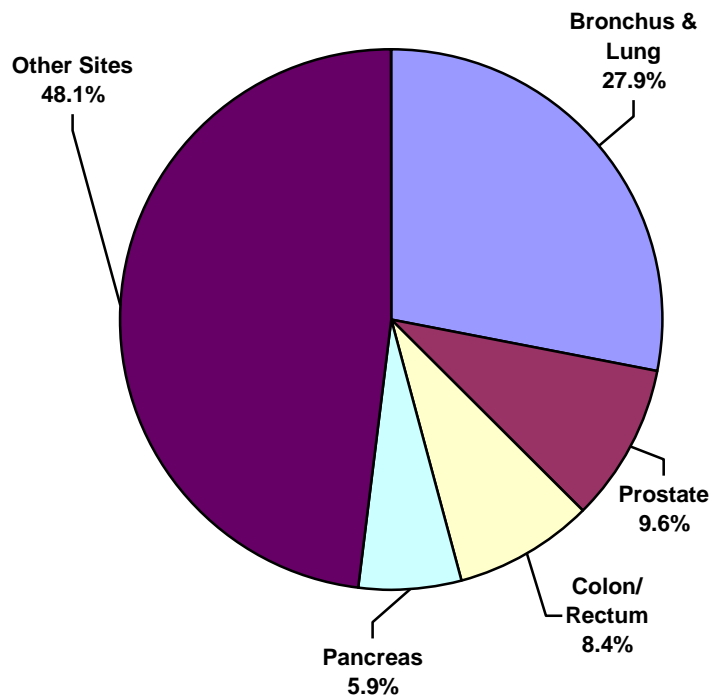
Figure 2.
INCIDENCE RATES¹ FOR TEN LEADING CANCER TYPES BY SEX
Massachusetts,
2006-2010



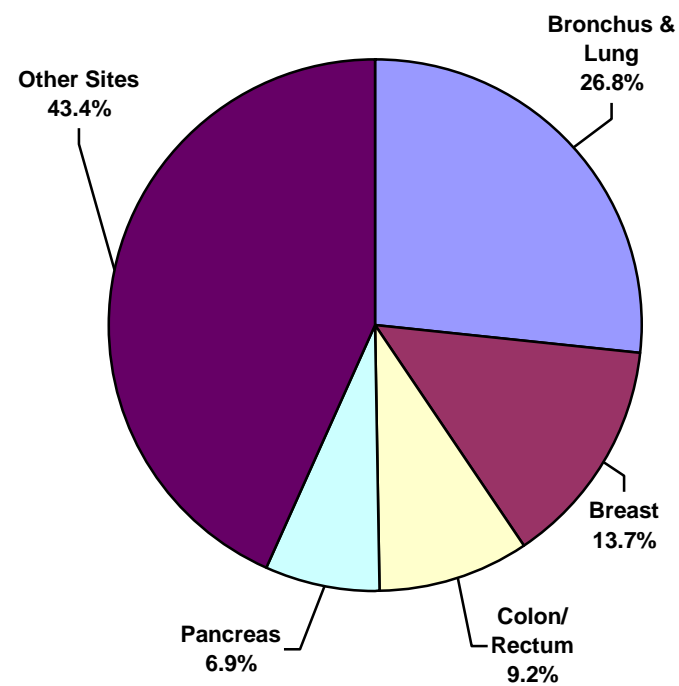
¹Rates are age-adjusted to the 2000 U.S. Standard Population. *NOS – Not Otherwise Specified.
Source: Massachusetts Cancer Registry

Figure 3.
PERCENTAGE OF CANCER DEATHS BY CANCER TYPE AND SEX
Massachusetts, 2006-2010

MALES (N=33,812)

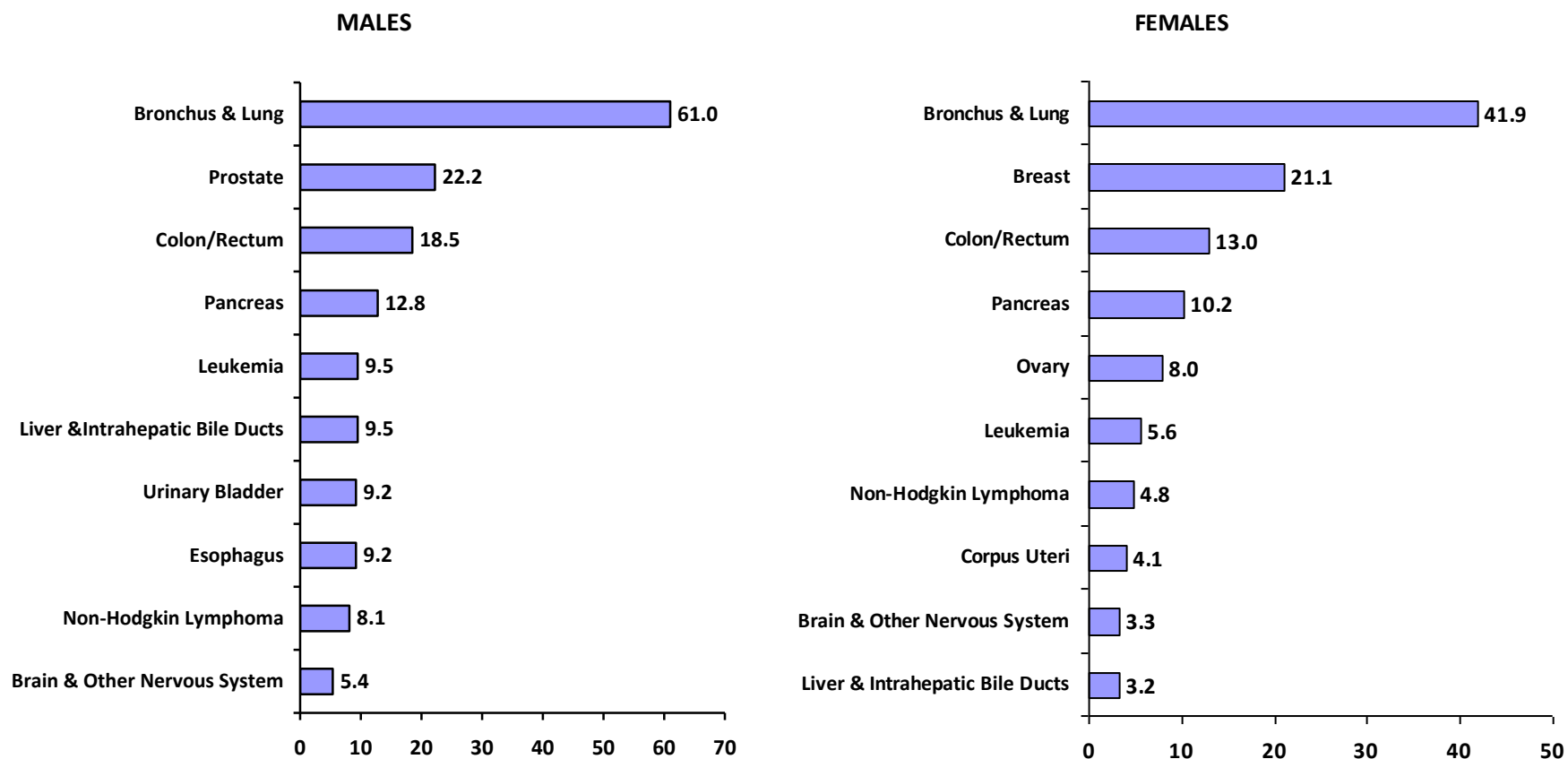


FEMALES (N=33,149)



Source: Massachusetts Vital Statistics

Figure 4.
MORTALITY RATES² FOR TEN LEADING CANCER TYPES BY SEX
Massachusetts, 2006-2010



¹Rates are age-adjusted to the 2000 U.S. Standard Population.
Source: Massachusetts Vital Statistics

Table 1.
AGE-SPECIFIC INCIDENCE RATES¹ AND MEDIAN AGE AT DIAGNOSIS FOR SELECTED CANCER SITES
Massachusetts, 2006-2010
MALES

Cancer Site / Type	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Median Age
All Sites	25.3	14.8	15.2	25.9	35.8	56.2	72.1	98.3	167.8	312.8	633.3	1047.1	1597.4	2303.6	2844.4	3160	3321.1	3242.3	67
Brain & Other Nervous System	4.8	4.7	2.5	2.7	2.0	3.9	4.5	3.9	5.2	8.8	9.9	15.1	15.2	17.7	26.7	32.1	32.4	27.7	57
Breast	³	-	-	-	-	-	-	0.1	0.5	0.8	0.9	2.1	3.1	6.4	5.2	9.0	9.3	10.5	68
Breast <i>in situ</i> ²	-	-	-	-	-	-	-	0.1	0.1	0.2	0.2	0.1	0.7	0.1	0.7	0.7	0.6	0.5	57
Bronchus & Lung	-	0.3	0.2	0.3	0.3	0.7	1.6	3.5	9.6	26.8	62.3	110.6	196.5	327.3	447.9	580.6	610.7	472.2	70
Colon / Rectum	-	-	0.2	0.6	0.3	1.6	4.4	9.6	17.8	31.2	68	76.2	105.5	170.9	226.1	294.8	348.4	422.1	68
Esophagus	-	-			0.1	0.1	0.3	1.0	2.0	5.6	12.4	23.9	38.5	48.2	55.6	60.1	61.4	56.8	66
Hodgkin Lymphoma	0.1	0.6	1.7	3.4	5.3	6.7	4.8	3.8	4.7	3.3	3.5	3.8	4.1	3.7	5.7	5.5	7.3	4.8	40
Kidney & Renal Pelvis	2.6	0.5	0.2	0.2	0.8	1.0	3.4	7.1	12.9	23.9	31.6	45.9	60.4	86.4	96.9	107.5	105.4	81.6	63
Larynx	-	-	-	-	-	0.1	0.2	0.6	1.2	3.4	8.5	13.8	20.9	29.3	33.3	32.9	35.5	26.7	66
Leukemia	7.9	3.6	3.0	3.5	2.5	2.7	3.3	3.3	6.1	9.2	14.9	18.9	33.7	44.6	65.5	88.4	110.1	136.4	67
Liver & Intrahepatic Bile Ducts	-	-	0.7	0.1	0.1	0.5	1.1	1.0	3.3	9.8	24.7	37.0	40.1	39.5	56.8	58.7	58.3	43.9	62
Melanoma of Skin	-	0.1	0.6	1.2	2.5	6.1	7.8	11.7	15.3	20.9	32.8	49.3	67.5	92.3	124.4	151.1	158.4	146.4	65
Multiple Myeloma	-	-	-	-	-	0.1	0.1	1.2	2.3	3.8	8.0	12.5	18.2	23.9	43.7	44.8	50.6	52.0	69
Non-Hodgkin Lymphoma	0.9	2.1	2.8	2.9	3.5	4.1	6.7	8.6	13.3	19.6	29.9	39.1	53.0	75.5	101.9	127.2	168.4	152.6	65
Oral Cavity & Pharynx	0.1	0.1	0.1	0.8	1.0	0.7	1.8	5.1	9.7	18.3	32.1	47.8	57.5	61.4	56.8	61.3	54.1	63.9	61
Pancreas	-	-	-	-	0.1	0.3	0.4	1.4	2.5	6.1	11.0	22.0	35.7	52.3	69.5	97.4	102.7	110.7	70
Prostate	-	-	-	-	-	0.1	0.2	1.3	14.0	58.7	187.2	385.3	624.1	871.4	925.3	744.4	536.5	501.8	65
Stomach	-	-	-	-	0.1	0.5	1.0	1.4	3.4	5.6	10.0	14.6	22.6	38.0	46.6	59.0	76.9	84.4	69
Testis	-	0.5	0.5	0.1	4.2	9.1	15.5	14.6	13.3	9.6	8.0	5.0	3.8	2.0	1.1	0.5	0.6	1.0	35
Thyroid	-	0.1	0.2	1.3	3.0	5.0	5.4	8.0	11.2	15.3	17.0	18.4	22.6	24.8	27.2	23.4	17.0	13.8	54
Urinary Bladder	-	0.1	0.1	0.1	0.7	1.0	2.4	2.6	7.4	11.1	26.6	52.6	93.9	152.8	227.5	323.4	402.9	401.1	73
Other Sites	7.0	2.5	3.6	4.6	4.4	5.7	8.2	9.8	15.6	22.9	36.8	54.4	82.2	136	201.5	258.1	374.7	432.1	70

¹ per 100,000 ² Breast *in situ* is excluded from 'All Sites'. ³ Dashes indicate age groups with no incident cases.

Source: Massachusetts Cancer Registry

Table 2.
AGE-SPECIFIC INCIDENCE RATES¹ AND MEDIAN AGE AT DIAGNOSIS FOR SELECTED CANCER SITES
Massachusetts, 2006-2010
FEMALES

Cancer Site / Type	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Median Age
All Sites	24.2	11	13.5	23.1	43.6	74.4	132.3	200.2	329.2	496.7	670	848.4	1167.6	1503.3	1799.5	2084.2	2238.1	1899.1	66
Brain & Other Nervous System	5.3	3.3	2.8	2.3	2.6	3.0	3.6	3.0	4.1	4.7	6.3	10.7	11.2	15.1	18.9	20.1	25.3	18.7	60
Breast	³	-	-	0.1	1.6	8.0	26.9	66.3	143.8	217.7	252	280.3	367.9	433.4	448.5	476.9	475.3	344.2	61
Breast <i>in situ</i> ²	-	-	-	0.1	0.2	1.5	3.6	18.9	67.1	109.2	125.9	108.5	123.8	128.3	133	117.3	84.0	32.8	56
Bronchus & Lung	-	-	-		0.4	0.7	2.4	4.2	13.2	33.5	61.8	97.5	184.1	289.7	391.3	431.6	396	242.2	71
Cervix Uteri	-	-	-	0.4	0.8	3.5	8.3	9.0	9.3	10.5	7.5	11.0	8.5	11.4	8.9	8.9	7.7	6.8	50
Colon / Rectum	-	-	-	-	1.4	1.5	4.1	9.6	15.3	29.6	50.7	52.6	76.6	111.1	157.5	229	319.2	331.1	74
Corpus Uteri & Uterus, NOS	-	-	-	-	0.3	1.5	4.7	7.4	15.3	29.5	63.3	89.1	120.2	116.9	111.2	105.1	80.5	61.4	62
Esophagus	-	-	-	-	0.2	0.5	1.1	1.7	4.3	5.6	9.4	14.2	18.4	20.4	15.7	0.2	0.5	1.1	74
Hodgkin Lymphoma	-	0.3	1.3	3.7	5.5	4.5	3.2	3.9	3.7	1.6	2.1	2.3	3.2	4.3	4.4	6.0	5.1	2.8	40.5
Kidney & Renal Pelvis	-	1.3	1.1	0.1	0.8	0.9	2.4	4.1	6.6	10.9	15.2	20.1	29.2	39.7	53.1	51.7	52.2	33.0	66
Larynx	-	-	-	-	-	0.1	0.3	0.4	0.6	0.9	3.2	3.8	5.6	8.0	7.8	6.0	5.4	3.6	65
Leukemia	9.1	3.5	3.0	2.1	2.2	2.2	3.4	2.9	5.3	6.9	8.3	12.0	19.4	25.5	36.8	47.6	59.4	58.7	69
Liver & Intrahepatic Bile Ducts	0.9	0.1	0.1	0.2	0.1	0.1	0.3	0.4	1.3	1.9	4.6	8.3	9.1	12.6	14.8	19.9	22.5	17.5	69
Melanoma of Skin			0.5	2.9	8.1	10.6	16.6	15.6	19.9	25.4	28.0	33.8	42.5	43.8	53.1	60.2	71.9	58.5	59
Multiple Myeloma	-	-	-	-	-	0.1	0.2	0.4	1.1	2.7	5.5	8.2	12.0	16.8	22.9	27.5	31.6	29.2	72
Non-Hodgkin Lymphoma	0.3	0.7	0.8	2.1	1.3	2.9	4.2	6.0	8.1	10.6	19.4	29.4	40.3	56.5	70.1	89.8	94.3	87.7	69
Oral Cavity & Pharynx	0.1	0.1	0.3	0.3	0.3	1.1	1.8	2.3	4.2	5.8	10.6	15.5	18.8	21.8	23.7	28.5	31.1	29.2	65
Ovary		0.3	0.2	1.0	1.7	1.8	3.7	6.0	7.2	14.1	22.9	24.8	35.6	40.3	44.7	41	48.9	48.9	63
Pancreas	-	-	-	-	0.1	0.4	0.4	0.9	2.8	5.0	9.0	17.7	27.9	40.0	59.9	79.2	92.0	95.7	75
Stomach	-	-	-	-	0.2	0.5	0.7	1.0	2.1	2.9	4.4	6.0	7.1	13.2	19.3	28.5	38.9	47.1	76
Thyroid	-	0.1	1.1	4.7	13.0	25.5	37.2	43.8	44.8	51.1	49.2	47.6	42.0	47.7	38.1	37.0	24.1	11.7	48
Urinary Bladder	-	-	-	-	0.1	0.4	0.6	1.4	1.7	5.8	8.6	19.9	29.6	46.8	57.0	81.3	88.2	89.9	74
Other Sites	7.2	1.5	3.2	3.0	3.4	5.2	7.3	11.6	18.4	24.7	35.7	53.6	71.4	99.2	143.4	190.1	248.1	265.5	72

¹ per 100,000 ² Breast *in situ* is excluded from 'All Sites'. ³ Dashes indicate age groups with no incident cases.

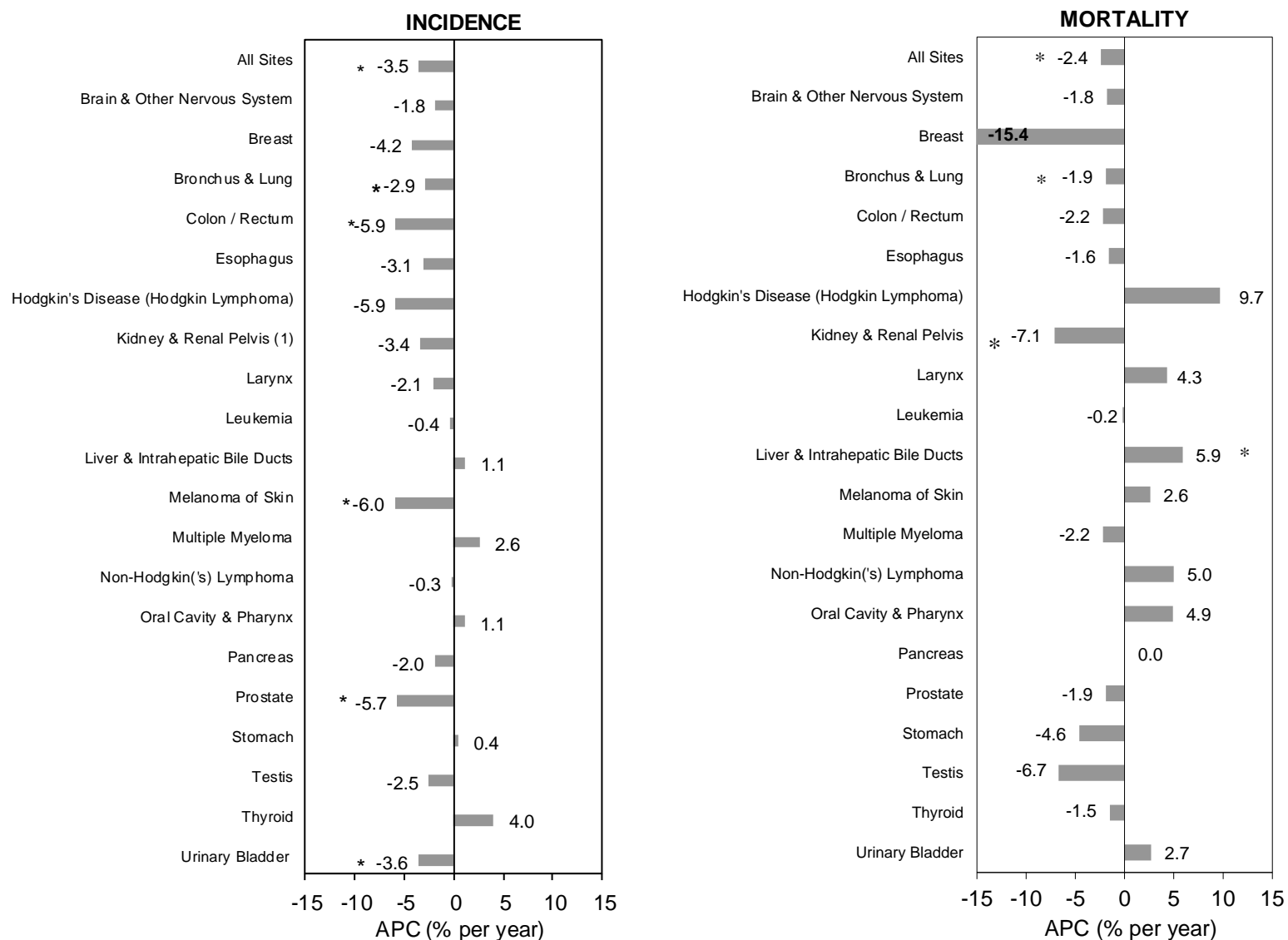
Table 3.
AGE-SPECIFIC INCIDENCE RATES¹ AND MEDIAN AGE AT DIAGNOSIS FOR SELECTED CANCER SITES
Massachusetts, 2006-2010
TOTAL

Cancer Site / Type	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Median Age
All Sites	24.8	12.9	14.3	24.5	39.7	65.3	102.3	150.1	249.9	406.5	652.2	944.5	1372	1873.8	2264.3	2533	2646.7	2297.6	66
Brain & Other Nervous System	5.0	4.0	2.7	2.5	2.3	3.5	4.1	3.4	4.7	6.7	8.0	12.8	13.1	16.3	22.4	25.1	28.0	21.4	58
Breast	³	-	-	0	0.8	4.0	13.5	33.7	73.4	111.2	129.8	146	194.4	235.8	251.3	281.7	299.5	245.2	62
Breast <i>in situ</i> ²	-	-	-	0	0.1	0.8	1.9	9.6	34.2	55.7	64.7	56.5	65.0	69.3	74.2	68.6	52.3	23.2	56
Bronchus & Lung		0.2	0.1	0.2	0.4	0.7	2.0	3.9	11.4	30.2	62.0	103.9	190	307.1	416.4	493.8	477	310.4	71
Cervix Uteri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50
Colon / Rectum	-	-	0.1	0.3	0.9	1.5	4.3	9.6	16.5	30.4	59.1	64.1	90.3	138.8	188.0	256.4	330.2	358.1	71
Corpus Uteri & Uterus, NOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	62
Esophagus	-	-	-	-	0	0	0.1	0.6	1.2	3.3	6.9	13.8	21.2	27.4	32.6	35.8	35.9	27.9	68
Hodgkin Lymphoma	0.1	0.5	1.5	3.5	5.4	5.6	4.0	3.8	4.2	2.4	2.8	3.0	3.6	4.0	4.9	5.8	6.0	3.4	40
Kidney & Renal Pelvis	1.9	0.8	0.1	0.1	0.8	1	2.9	5.6	9.7	17.2	23.2	32.5	44.0	61.3	72.6	75.0	72.3	47.4	64
Larynx	-	-	-	-	-	0.1	0.2	0.5	0.9	2.2	5.8	8.6	12.8	17.9	19.1	17.2	16.8	10.5	66
Leukemia	8.5	3.5	3.0	2.8	2.3	2.5	3.4	3.1	5.7	8.0	11.5	15.3	26.2	34.4	49.5	64.6	78.6	81.8	68
Liver & Intrahepatic Bile Ducts	0.8	0.1	0	0.1	0.1	0.3	0.7	0.7	2.3	5.8	14.4	22.2	23.8	25.0	33.5	36.0	36.0	25.3	64
Melanoma of Skin		0.1	0.5	2.1	5.3	8.4	12.2	13.7	17.7	23.2	30.3	41.3	54.4	66.3	84.8	98.1	104.5	84.6	62
Multiple Myeloma	-	-	-	-	-	0.1	0.1	0.8	1.7	3.2	6.7	10.3	15.0	20.1	32.2	34.7	38.8	35.9	70
Non-Hodgkin Lymphoma	0.6	1.4	1.8	2.5	2.4	3.5	5.4	7.3	10.7	15	24.6	34.1	46.4	65.3	84.3	105.4	122.3	107	67
Oral Cavity & Pharynx	0.1	0.1	0.2	0.5	0.7	0.9	1.8	3.7	6.9	11.9	21.1	31.1	37.2	40.2	38.4	42.2	39.8	39.5	62
Ovary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63
Pancreas	-	-	-	0	0	0.3	0.4	1.1	2.7	5.5	10.0	19.8	31.6	45.7	64.2	86.8	96.0	100.2	73
Prostate	-	-	-	-	-	0.1	0.1	0.6	6.9	28.8	91.2	186	296.7	403.4	411.6	310.5	202.4	148.8	65
Stomach	-	-	-	0.1	0	0.5	0.8	1.2	2.7	4.3	7.1	10.2	14.5	24.7	31.5	41.2	53.2	58.1	72
Testis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35
Thyroid	0.1	0.1	0.6	3.0	8.0	15.2	21.3	26.2	28.3	33.5	33.5	33.5	32.8	37.1	33.2	31.3	21.4	12.3	50
Urinary Bladder	-	0.1	0.1	0.1	0.3	0.7	1.5	2.0	4.5	8.4	17.4	35.7	60.1	95.9	132.9	182.3	206.9	182.2	73
Other Sites	7.1	2.0	3.4	3.8	3.9	5.5	7.7	10.7	17.1	23.8	36.3	54.0	76.5	116.3	169.3	218.4	295.8	314.9	71

¹per 100,000 ² Breast *in situ* is excluded from 'All Sites'. ³ Dashes indicate age groups with no incident cases or cancers found in only one sex.

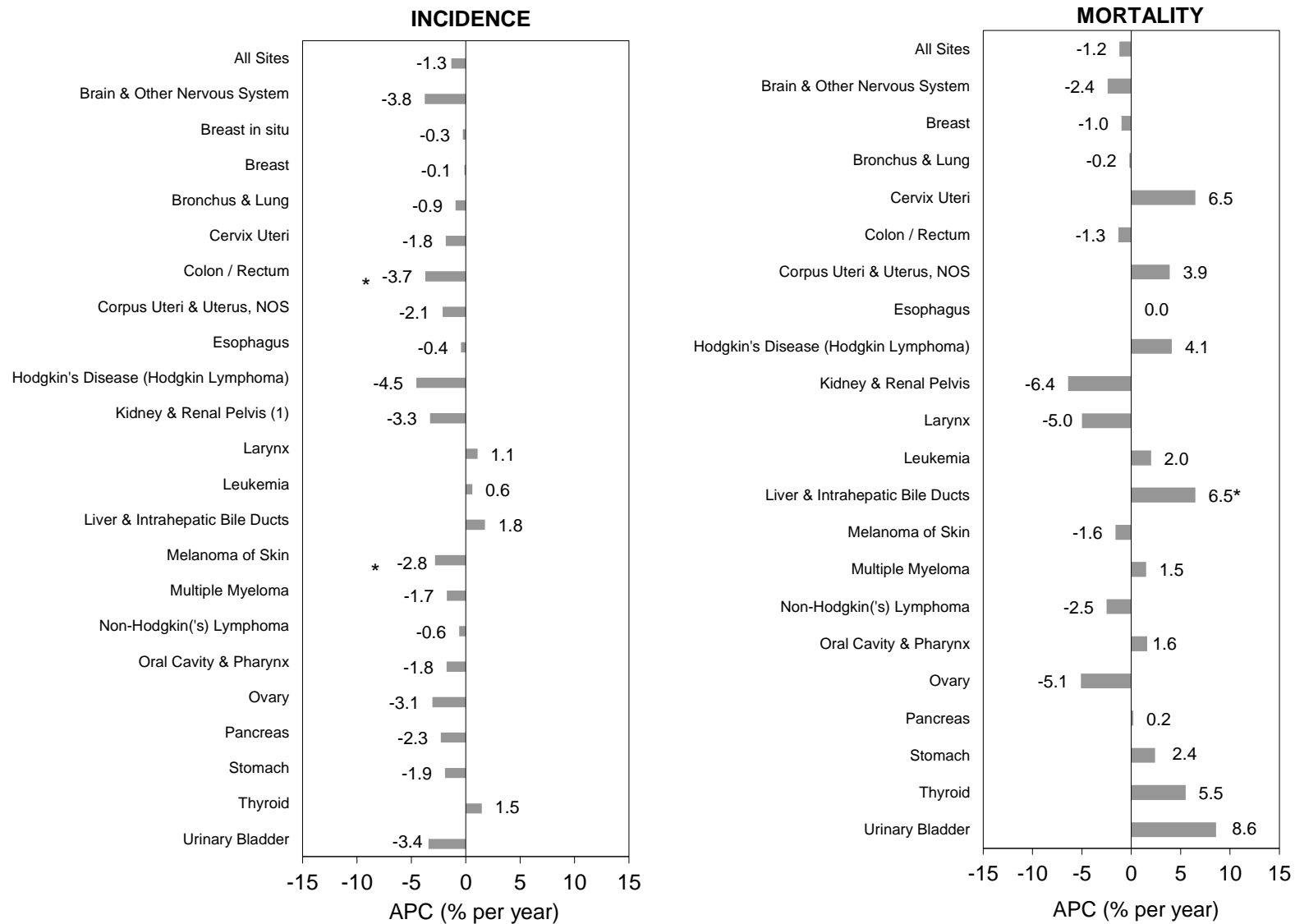
Source: Massachusetts Cancer Registry.

Figure 5.
ANNUAL PERCENT CHANGE (APC) IN AGE-ADJUSTED CANCER RATES AMONG MALES
Massachusetts, 2006-2010



*APC is statistically significant ($p \leq 0.05$). Values appearing directly on a bar have been bolded for ease of reading only. Source: Massachusetts Cancer Registry.

Figure 6.
ANNUAL PERCENT CHANGE (APC) IN AGE-ADJUSTED CANCER RATES AMONG FEMALES
Massachusetts, 2006-2010



*APC is statistically significant ($p \leq 0.05$). Values appearing directly on a bar have been bolded for ease of reading only. Source: Massachusetts Cancer Registry.

Table 4.
ANNUAL AGE-ADJUSTED¹ INCIDENCE RATES² FOR SELECTED CANCER SITES
Massachusetts, 2006-2010
MALES

Cancer Site / Type	2006	2007	2008	2009	2010
All Sites	612.9	601.4	585.7	563.3	529.6
Brain & Other Nervous System	8.2	9.5	8.4	7.7	8.3
Breast	1.6	1.3	1.1	1.5	1.2
Breast <i>in situ</i>³	0.3	0.1	0.2	0.1	0.2
Bronchus & Lung	83.3	81.7	80.7	78.6	73.4
Colon / Rectum	57.6	53.1	51.2	48.4	44.6
Esophagus	11.3	11.7	11.6	11.3	9.8
Hodgkin Lymphoma	3.9	4.2	4.0	3.2	3.3
Kidney & Renal Pelvis	23.7	22.5	24.3	22.8	19.8
Larynx	7.3	5.9	6.0	6.8	6.1
Leukemia	15.8	17.1	16.7	17.7	15.2
Liver & Intrahepatic Bile Ducts	12.6	11.6	12.8	13.2	12.5
Melanoma of Skin	32.6	29.1	28.5	26.7	25.0
Multiple Myeloma	7.1	7.3	7.3	8.2	7.6
Non-Hodgkin Lymphoma	24.8	25.8	25.3	26.3	24.2
Oral Cavity & Pharynx	16.6	16.5	17.3	16.7	17.4
Pancreas	14.5	14.2	14.5	14.7	12.9
Prostate	172.4	170.8	158.8	144.3	139.7
Stomach	9.1	10.8	11.4	9.7	9.8
Testis	6.3	6.4	5.9	6.5	5.5
Thyroid	8.3	9.0	9.8	10.4	9.4
Urinary Bladder	47.1	46.1	45.1	43.8	40.2

¹ Rates are age-adjusted to the 2000 U.S. Standard Population. ²per 100,000 males

³Breast *in situ* is excluded from “All Sites”

Source: Massachusetts Cancer Registry

Table 5.
ANNUAL AGE-ADJUSTED¹ INCIDENCE RATES² FOR SELECTED CANCER SITES
Massachusetts, 2006-2010
FEMALES

Cancer Site / Type	2006	2007	2008	2009	2010
All Sites	472.0	464.3	477.6	465.8	441.0
Brain & Other Nervous System	6.8	6.4	6.5	5.6	6.0
Breast	132.7	133.9	141.7	136.1	129.9
Breast <i>in situ</i> ³	44.9	48.5	49.2	47.9	44.9
Bronchus & Lung	65.5	64.5	66.4	64.7	62.4
Cervix Uteri	6.2	5.4	5.5	5.5	5.6
Colon / Rectum	41.8	40.8	39.5	38.3	35.7
Corpus Uteri & Uterus, NOS	30.9	29.9	32.2	30.2	27.6
Esophagus	2.5	2.5	2.7	2.6	2.4
Hodgkin Lymphoma	3.4	2.7	3.2	2.9	2.6
Kidney & Renal Pelvis	12.0	10.9	11.4	10.8	10.2
Larynx	1.6	1.5	1.6	1.9	1.5
Leukemia	9.9	9.8	10.7	9.8	10.2
Liver & Intrahepatic Bile Ducts	3.2	3.6	3.8	3.8	3.4
Melanoma of Skin	20.9	19.4	19.5	18.8	18.4
Multiple Myeloma	4.9	4.4	4.7	4.8	4.3
Non-Hodgkin Lymphoma	16.8	17.3	15.9	16.3	16.8
Oral Cavity & Pharynx	7.2	6.4	6.4	7.0	6.3
Ovary	12.7	12.1	12.9	13.2	10.4
Pancreas	12.6	11.2	12.1	12.1	10.8
Stomach	4.9	4.7	4.7	4.4	4.6
Thyroid	25.9	28.5	28.1	30.1	27.1
Urinary Bladder	12.6	12.3	12.6	11.6	10.9

¹ Rates are age-adjusted to the 2000 U.S. Standard Population. ²per 100,000 males

³Breast *in situ* is excluded from "All Sites"

Source: Massachusetts Cancer Registry

Table 6.
ANNUAL AGE-ADJUSTED¹ INCIDENCE RATES² FOR SELECTED CANCER SITES
Massachusetts, 2006-2010
TOTAL

Cancer Site / Type	2006	2007	2008	2009	2010
All Sites	527.9	519.0	519.5	503.3	476.1
Brain & Other Nervous System	7.4	7.8	7.4	6.6	7.0
Breast	72.8	73.2	77.3	74.1	70.7
Breast <i>in situ</i>³	24.0	25.8	26.1	25.2	23.8
Bronchus & Lung	72.5	71.2	71.9	70.0	66.6
Cervix Uteri	-- ⁴	--	--	--	--
Colon / Rectum	48.6	46.1	44.6	42.7	39.6
Corpus Uteri & Uterus, NOS	--	--	--	--	--
Esophagus	6.4	6.6	6.7	6.4	5.7
Hodgkin Lymphoma	3.6	3.4	3.6	3.0	2.9
Kidney & Renal Pelvis	17.1	16.0	17.2	16.3	14.6
Larynx	4.1	3.4	3.5	4.0	3.5
Leukemia	12.4	12.9	13.2	13.1	12.2
Liver & Intrahepatic Bile Ducts	7.4	7.2	7.8	8.0	7.5
Melanoma of Skin	25.6	23.3	23.0	21.9	21.1
Multiple Myeloma	5.8	5.6	5.8	6.2	5.7
Non-Hodgkin Lymphoma	20.3	20.9	20.0	20.6	20.0
Oral Cavity & Pharynx	11.5	11.0	11.3	11.5	11.4
Ovary	--	--	--	--	--
Pancreas	13.5	12.5	13.1	13.2	11.7
Prostate	--	--	--	--	--
Stomach	6.7	7.4	7.6	6.7	6.8
Testis	--	--	--	--	--
Thyroid	17.3	19.0	19.1	20.5	18.5
Urinary Bladder	26.8	26.3	26.1	25.0	23.1

¹ Rates are age-adjusted to the 2000 U.S. Standard Population. ²per 100,000 total population

³Breast *in situ* is excluded from "All Sites" ⁴Dashes indicate cancers found in only one sex.

Source: Massachusetts Cancer Registry

Table 7.
ANNUAL AGE-ADJUSTED¹ MORTALITY RATES² FOR SELECTED CANCER SITES
Massachusetts, 2006-2010
MALES

Cancer Site / Type	2006	2007	2008	2009	2010
All Sites	231.5	223.3	220.0	210.9	210.2
Brain & Other Nervous System	5.7	5.6	4.8	5.6	5.2
Breast	0.4	0.3	0.3	0.1	0.3
Bronchus & Lung	61.8	59.2	58.4	57.6	57.0
Colon / Rectum	19.7	17.5	16.7	18.1	17.3
Esophagus	9.4	8.7	8.8	8.8	8.6
Hodgkin Lymphoma	0.5	0.4	0.5	0.7	0.6
Kidney & Renal Pelvis	5.6	5.8	5.1	4.7	4.3
Larynx	1.5	1.9	2.3	1.8	1.9
Leukemia	9.7	9.1	8.8	8.7	9.8
Liver & Intrahepatic Bile Ducts	8.0	8.7	9.5	9.3	10.3
Melanoma of Skin	4.1	4.3	3.9	4.4	4.6
Multiple Myeloma	4.2	4.4	4.6	4.3	3.8
Non-Hodgkin Lymphoma	8.3	7.8	7.9	7.1	7.8
Oral Cavity & Pharynx	3.4	3.7	4.1	3.4	4.5
Pancreas	12.2	12.2	12.7	12.4	12.1
Prostate	22.2	22.1	20.5	20.3	21.0
Stomach	5.4	4.8	5.4	4.7	4.3
Testis	0.1	0.2	0.2	0.1	0.1
Thyroid	0.5	0.7	0.5	0.6	0.5
Urinary Bladder	8.8	7.7	9.6	8.6	9.5

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000 males

Source: Massachusetts Vital Statistics

Table 8
ANNUAL AGE-ADJUSTED¹ MORTALITY RATES² FOR SELECTED CANCER SITES
Massachusetts, 2006-2010
FEMALES

Cancer Site / Type	2006	2007	2008	2009	2010
All Sites	157.3	151.8	151.0	153.1	146.8
Brain & Other Nervous System	3.3	3.5	3.3	3.8	2.8
Breast	21.9	19.2	20.7	22.2	19.4
Bronchus & Lung	41.3	41.7	40.2	41.9	40.8
Cervix Uteri	1.2	1.0	1.2	1.6	1.3
Colon / Rectum	13.2	13.0	13.3	12.3	12.7
Corpus Uteri & Uterus, NOS	4.0	3.4	4.2	4.3	4.3
Esophagus	2.0	1.9	2.1	2.1	1.9
Hodgkin Lymphoma	0.4	0.2	0.3	0.3	0.4
Kidney & Renal Pelvis	2.6	2.5	2.0	2.7	1.8
Larynx	0.5	0.5	0.3	0.3	0.5
Leukemia	5.8	4.5	5.7	5.9	5.6
Liver & Intrahepatic Bile Ducts	2.8	3.0	3.0	3.4	3.6
Melanoma of Skin	2.0	1.9	2.1	2.0	1.8
Multiple Myeloma	2.5	2.5	2.2	2.9	2.5
Non-Hodgkin Lymphoma	5.1	4.7	5.0	4.3	4.7
Oral Cavity & Pharynx	1.6	1.4	1.1	1.3	1.8
Ovary	9.2	8.0	7.2	7.7	7.2
Pancreas	9.6	10.7	10.3	9.7	10.2
Stomach	2.0	2.5	2.7	2.2	2.4
Thyroid	0.6	0.4	0.4	0.5	0.7
Urinary Bladder	2.0	2.4	2.9	3.0	2.7

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000 females

Source: Massachusetts Vital Statistics

Table 9.
ANNUAL AGE-ADJUSTED¹ MORTALITY RATES² FOR SELECTED CANCER SITES
Massachusetts, 2006-2010
TOTAL

Cancer Site / Type	2006	2007	2008	2009	2010
All Sites	186.3	179.5	178.0	175.0	172.0
Brain & Other Nervous System	4.3	4.3	4.1	4.8	3.9
Breast	12.6	11.0	11.8	12.4	10.9
Bronchus & Lung	49.3	48.9	47.8	48.3	47.3
Cervix Uteri	-	-	-	-	-
Colon / Rectum	16.0	14.9	14.7	14.7	14.7
Corpus Uteri & Uterus, NOS	-	-	-	-	-
Esophagus	5.3	4.8	5.1	5.0	4.8
Hodgkin Lymphoma	0.4	0.3	0.3	0.5	0.5
Kidney & Renal Pelvis	3.9	3.9	3.3	3.5	2.8
Larynx	0.9	1.1	1.2	0.9	1.1
Leukemia	7.4	6.4	6.9	6.9	7.2
Liver & Intrahepatic Bile Ducts	5.1	5.5	5.8	6.0	6.6
Melanoma of Skin	2.9	2.9	2.8	3.0	3.0
Multiple Myeloma	3.2	3.3	3.2	3.5	3.0
Non-Hodgkin Lymphoma	6.5	6.0	6.2	5.5	6.0
Oral Cavity & Pharynx	2.4	2.4	2.4	2.3	3.1
Ovary	-	-	-	-	-
Pancreas	10.8	11.4	11.4	10.8	11.1
Prostate	-	-	-	-	-
Stomach	3.5	3.4	3.8	3.3	3.2
Testis	-	-	-	-	-
Thyroid	0.5	0.6	0.4	0.6	0.6
Urinary Bladder	4.7	4.5	5.6	5.2	5.3

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000 total population

Source: Massachusetts Vital Statistics

Table 10.
FIVE LEADING CANCER INCIDENCE RATES BY RACE/ETHNICITY AND SEX
Massachusetts, 2006-2010

MALES

AGE-ADJUSTED¹ INCIDENCE RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Prostate 146.8	Prostate 249.6	Prostate 72.6	Prostate 162.7
2	Bronchus & Lung 81.2	Bronchus & Lung 81.7	Bronchus & Lung 58.7	Bronchus & Lung 44.3
3	Colon/Rectum 50.7	Colon/Rectum 55.6	Colon/Rectum 39.4	Colon/Rectum 37.2
4	Urinary Bladder 46.4	Urinary Bladder 23.1	Liver 34.4	Liver 20.7
5	Melanoma of Skin 29.8	Kidney & Renal Pelvis 22.2	Stomach 14.3	Urinary Bladder 18.0

FEMALES

AGE-ADJUSTED¹ INCIDENCE RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Breast 139.8	Breast 114.0	Breast 83.5	Breast 88.2
2	Bronchus & Lung 68.3	Bronchus & Lung 44.5	Colon/Rectum 36.0	Colon/Rectum 32.3
3	Colon/Rectum 39.0	Colon/Rectum 41.8	Thyroid 30.7	Bronchus & Lung 25.3
4	Corpus Uteri & Uterus, NOS 30.9	Thyroid 26.9	Bronchus & Lung 29.2	Thyroid 25.2
5	Thyroid 27.9	Corpus Uteri & Uterus, NOS 26.0	Corpus Uteri & Uterus, NOS 17.9	Corpus Uteri & Uterus, NOS 21.3

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000

³ Breast cancer rates do not include *in situ* cases.

Source: Massachusetts Cancer Registry

Table 11.
NUMBER AND PERCENTAGE OF INCIDENT CASES FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2006-2010
MALES

Cancer Site / Type	All Races ²		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases
All Sites	91727	100.0	80898	100.0	4119	100.0	1754	100.0	2765	100.0
Brain & Other Nervous System	1335	1.5	1206	1.5	36	0.9	27	1.5	60	2.2
Breast ³	209	0.2	195	0.2	9	0.2	3	0.2	2	0.1
Bronchus & Lung	12256	13.4	11256	13.9	484	11.8	266	15.2	221	8.0
Colon / Rectum	7925	8.6	7048	8.7	356	8.6	203	11.6	223	8.1
Esophagus	1798	2.0	1685	2.1	54	1.3	21	1.2	33	1.2
Hodgkin Lymphoma	593	0.6	502	0.6	35	0.8	12	0.7	40	1.4
Kidney & Renal Pelvis	3655	4.0	3277	4.1	165	4.0	67	3.8	127	4.6
Larynx	1041	1.1	939	1.2	42	1.0	12	0.7	39	1.4
Leukemia	2541	2.8	2279	2.8	71	1.7	53	3.0	84	3.0
Liver & Intrahepatic Bile Ducts	2091	2.3	1593	2.0	141	3.4	198	11.3	147	5.3
Melanoma of Skin	4482	4.9	4138	5.1	4	0.1	6	0.3	14	0.5
Multiple Myeloma	1170	1.3	992	1.2	102	2.5	21	1.2	44	1.6
Non-Hodgkin Lymphoma	3969	4.3	3543	4.4	162	3.9	73	4.2	127	4.6
Oral Cavity & Pharynx	2844	3.1	2535	3.1	123	3.0	67	3.8	98	3.5
Pancreas	2191	2.4	1999	2.5	94	2.3	30	1.7	63	2.3
Prostate	25811	28.1	21585	26.7	1650	40.1	347	19.8	922	33.3
Stomach	1580	1.7	1303	1.6	98	2.4	69	3.9	103	3.7
Testis	971	1.1	871	1.1	16	0.4	16	0.9	56	2.0
Thyroid	1555	1.7	1362	1.7	52	1.3	63	3.6	49	1.8
Urinary Bladder	6720	7.3	6343	7.8	123	3.0	58	3.3	93	3.4
Other Sites	6990	7.6	6247	7.7	302	7.3	142	8.1	220	8.0

¹ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category.

² The number of cases for all races is not the sum of cases by race/ethnicity. ³ Breast *in situ* cases are excluded from 'All Sites' and breast cancer counts.

Source: Massachusetts Cancer Registry

Table 12.
NUMBER AND PERCENTAGE OF INCIDENT CASES FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2006-2010
FEMALES

Cancer Site / Type	All Races ²		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases
All Sites	92478	100.0	83036	100.0	3600	100.0	2033	100.0	2822	100.0
Brain & Other Nervous System	1168	1.3	1060	1.3	32	0.9	23	1.1	51	1.8
Breast ³	26451	28.6	23873	28.8	1043	29.0	602	29.6	806	28.6
Bronchus & Lung	13065	14.1	12304	14.8	383	10.6	162	8.0	177	6.3
Cervix Uteri	1011	1.1	766	0.9	87	2.4	46	2.3	97	3.4
Colon / Rectum	8308	9.0	7433	9.0	359	10.0	206	10.1	247	8.8
Corpus Uteri & Uterus, NOS	6042	6.5	5430	6.5	231	6.4	124	6.1	201	7.1
Esophagus	528	0.6	466	0.6	32	0.9	13	0.6	16	0.6
Hodgkin Lymphoma	510	0.6	440	0.5	22	0.6	9	0.4	35	1.2
Kidney & Renal Pelvis	2178	2.4	1931	2.3	131	3.6	30	1.5	71	2.5
Larynx	321	0.3	297	0.4	10	0.3	3	0.1	11	0.4
Leukemia	1985	2.1	1738	2.1	79	2.2	51	2.5	80	2.8
Liver & Intrahepatic Bile Ducts	729	0.8	580	0.7	44	1.2	54	2.7	47	1.7
Melanoma of Skin	3721	4.0	3355	4.0	10	0.3	17	0.8	25	0.9
Multiple Myeloma	963	1.0	789	1.0	97	2.7	14	0.7	44	1.6
Non-Hodgkin Lymphoma	3365	3.6	2989	3.6	146	4.1	69	3.4	110	3.9
Oral Cavity & Pharynx	1345	1.5	1209	1.5	38	1.1	41	2.0	46	1.6
Ovary	2451	2.7	2231	2.7	73	2.0	57	2.8	73	2.6
Pancreas	2497	2.7	2268	2.7	123	3.4	45	2.2	59	2.1
Stomach	999	1.1	801	1.0	77	2.1	59	2.9	61	2.2
Thyroid	4954	5.4	4045	4.9	262	7.3	250	12.3	299	10.6
Urinary Bladder	2529	2.7	2376	2.9	49	1.4	21	1.0	43	1.5
Other Sites	7358	8.0	6655	8.0	272	7.6	137	6.7	223	7.9

¹ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category.

² The number of cases for all races is not the sum of cases by race/ethnicity. ³Breast *in situ* cases are excluded from 'All Sites' and from breast cancer counts.

Source: Massachusetts Cancer Registry

Table 13.
NUMBER AND PERCENTAGE OF INCIDENT CASES FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2006-2010
TOTAL²

Cancer Site / Type	All Races ³		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases
All Sites	184212	100.0	163938	100.0	7720	100.0	3787	100.0	5588	100.0
Brain & Other Nervous System	2503	1.4	2266	1.4	68	0.9	50	1.3	111	2.0
Breast⁴	26660	14.5	24068	14.7	1052	13.6	605	16.0	808	14.5
Bronchus & Lung	25322	13.7	23561	14.4	867	11.2	428	11.3	398	7.1
Cervix Uteri	1011	0.5	766	0.5	87	1.1	46	1.2	97	1.7
Colon / Rectum	16234	8.8	14482	8.8	715	9.3	409	10.8	470	8.4
Corpus Uteri & Uterus, NOS	6042	3.3	5430	3.3	231	3.0	124	3.3	201	3.6
Esophagus	2326	1.3	2151	1.3	86	1.1	34	0.9	49	0.9
Hodgkin Lymphoma	1103	0.6	942	0.6	57	0.7	21	0.6	75	1.3
Kidney & Renal Pelvis	5833	3.2	5208	3.2	296	3.8	97	2.6	198	3.5
Larynx	1362	0.7	1236	0.8	52	0.7	15	0.4	50	0.9
Leukemia	4526	2.5	4017	2.5	150	1.9	104	2.7	164	2.9
Liver & Intrahepatic Bile Ducts	2821	1.5	2173	1.3	185	2.4	252	6.7	194	3.5
Melanoma of Skin	8203	4.5	7493	4.6	14	0.2	23	0.6	39	0.7
Multiple Myeloma	2133	1.2	1781	1.1	199	2.6	35	0.9	88	1.6
Non-Hodgkin Lymphoma	7337	4.0	6534	4.0	309	4.0	142	3.7	237	4.2
Oral Cavity & Pharynx	4189	2.3	3744	2.3	161	2.1	108	2.9	144	2.6
Ovary	2451	1.3	2231	1.4	73	0.9	57	1.5	73	1.3
Pancreas	4688	2.5	4267	2.6	217	2.8	75	2.0	122	2.2
Prostate	25811	14.0	21585	13.2	1650	21.4	347	9.2	922	16.5
Stomach	2579	1.4	2104	1.3	175	2.3	128	3.4	164	2.9
Testis	971	0.5	871	0.5	16	0.2	16	0.4	56	1.0
Thyroid	6509	3.5	5407	3.3	314	4.1	313	8.3	348	6.2
Urinary Bladder	9249	5.0	8719	5.3	172	2.2	79	2.1	136	2.4
Other Sites	14349	7.8	12902	7.9	574	7.4	279	7.4	444	7.9

¹ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category.

²Total includes persons classified as a transsexual and persons of unknown sex. ³The number of cases for all races is not the sum of cases by race/ethnicity.

⁴Breast in situ cases are excluded from 'All Sites' and from breast cancer counts.

Source: Massachusetts Cancer Registry

Table 14.
AGE-ADJUSTED¹ INCIDENCE RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2006-2010
MALES

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	577.8	574.0-581.6	575	571.0-579.0	632.4	611.6-653.2	338.4	321.3-355.5	444.1	425.2-463.1
Brain & Other Nervous System	8.4	7.9-8.9	9.0	8.5-9.5	4.4	2.8-6.0	4.4	2.5-6.2	7.2	4.9-9.5
Breast	1.3	1.2-1.5	1.4	1.2-1.6	*	*	*	*	*	*
Breast <i>in situ</i>⁴	0.2	0.1-0.2	0.1	0.1-0.2	*	*	*	*	*	*
Bronchus & Lung	79.5	78.0-80.9	81.2	79.7-82.7	81.7	73.9-89.5	58.7	51.2-66.2	44.3	37.8-50.8
Colon / Rectum	50.8	49.7-51.9	50.7	49.5-51.9	55.6	49.3-61.8	39.4	33.6-45.2	37.2	31.7-42.8
Esophagus	11.1	10.6-11.7	11.7	11.1-12.3	9.0	6.4-11.5	4.3	2.3-6.3	5.7	3.5-7.9
Hodgkin Lymphoma	3.7	3.4-4.0	3.9	3.6-4.3	3.6	2.3-4.8	*	*	3.9	2.4-5.4
Kidney & Renal Pelvis	22.6	21.8-23.3	23.0	22.2-23.8	22.2	18.6-25.9	12.1	8.9-15.2	17.1	13.6-20.6
Larynx	6.4	6.0-6.8	6.5	6.1-6.9	6.7	4.5-8.8	*	*	5.8	3.8-7.8
Leukemia	16.5	15.9-17.2	16.9	16.2-17.6	10.2	7.5-12.8	9.0	6.3-11.7	9.9	7.2-12.7
Liver & Intrahepatic Bile Ducts	12.6	12.0-13.1	10.8	10.3-11.4	20.4	16.8-24.1	34.4	29.3-39.6	20.7	17.0-24.4
Melanoma of Skin	28.3	27.5-29.2	29.8	28.8-30.7	*	*	*	*	*	*
Multiple Myeloma	7.5	7.1-7.9	7.1	6.7-7.6	17.4	13.8-21.1	4.4	2.4-6.4	9.2	6.1-12.2
Non-Hodgkin Lymphoma	25.2	24.5-26.0	25.7	24.9-26.6	22.2	18.5-26.0	12.7	9.5-15.9	16.1	12.7-19.4
Oral Cavity & Pharynx	16.9	16.3-17.5	17.2	16.5-17.9	16.2	13.1-19.2	9.9	7.3-12.4	14.4	11.2-17.6
Pancreas	14.1	13.5-14.7	14.4	13.7-15.0	16.7	13.1-20.4	6.9	4.3-9.5	13.0	9.5-16.6
Prostate	156.8	154.9-158.8	146.8	144.8-148.8	249.6	236.8-262.4	72.6	64.6-80.6	162.7	151.2-174.2
Stomach	10.2	9.7-10.7	9.4	8.9-9.9	16.6	13.1-20.2	14.3	10.6-18.0	16.7	13.0-20.4
Testis	6.1	5.7-6.5	7.2	6.7-7.7	*	*	*	*	3.4	2.5-4.3
Thyroid	9.4	8.9-9.9	9.8	9.2-10.3	6.4	4.5-8.2	8.8	6.6-11.1	6.2	4.2-8.2
Urinary Bladder	44.4	43.3-45.5	46.4	45.3-47.6	23.1	18.7-27.4	12.8	9.2-16.3	18.0	13.9-22.2

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000

³ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category. ⁴ Breast *in situ* is excluded from 'All Sites'.

*An age-adjusted incidence rate was not calculated when there were fewer than 20 cases.

Source: Massachusetts Cancer Registry

Table 15.
AGE-ADJUSTED¹ INCIDENCE RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2006-2010
FEMALES

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	463.9	460.9-467.0	475.4	472.1-478.8	403.6	390.1-417.0	307.1	293.0-321.1	320.6	307.7-333.5
Brain & Other Nervous System	6.3	5.9-6.6	6.7	6.3-7.1	3.2	2.0-4.3	2.8	1.6-4.0	4.2	2.9-5.5
Breast	134.8	133.2-136.5	139.8	138.0-141.6	114.0	107.0-121.1	83.5	76.5-90.4	88.2	81.7-94.8
Breast <i>in situ</i>⁴	47.0	46.0-48.0	48.4	47.3-49.5	42.2	38.0-46.4	32.0	27.8-36.2	35.4	31.4-39.3
Bronchus & Lung	64.7	63.5-65.8	68.3	67.0-69.5	44.5	40.0-49.1	29.2	24.6-33.9	25.3	21.3-29.2
Cervix Uteri	5.6	5.3-6.0	5.2	4.8-5.5	9.5	7.5-11.5	6.6	4.6-8.6	9.3	7.3-11.3
Colon / Rectum	39.2	38.3-40.0	39.0	38.1-39.9	41.8	37.4-46.1	36.0	30.9-41.2	32.3	27.9-36.7
Corpus Uteri & Uterus, NOS	30.1	29.4-30.9	30.9	30.0-31.7	26.0	22.6-29.5	17.9	14.6-21.2	21.3	18.2-24.5
Esophagus	2.5	2.3-2.8	2.5	2.2-2.7	3.8	2.4-5.1	*	*	*	*
Hodgkin Lymphoma	3.0	2.7-3.2	3.2	2.9-3.5	2.2	1.3-3.2	*	*	3.2	2.0-4.4
Kidney & Renal Pelvis	11.1	10.6-11.5	11.2	10.7-11.7	14.7	12.1-17.3	5.0	3.1-6.9	8.3	6.2-10.4
Larynx	1.6	1.4-1.8	1.7	1.5-1.9	*	*	*	*	*	*
Leukemia	10.1	9.6-10.6	10.1	9.6-10.6	8.9	6.9-10.9	7.5	5.3-9.6	7.7	5.8-9.6
Liver & Intrahepatic Bile Ducts	3.6	3.3-3.8	3.2	2.9-3.4	4.7	3.3-6.1	9.6	6.9-12.2	6.6	4.6-8.6
Melanoma of Skin	19.4	18.8-20.1	20.7	20.0-21.5	*	*	*	*	2.3	1.3-3.3
Multiple Myeloma	4.6	4.3-4.9	4.2	3.9-4.5	11.5	9.2-13.9	2.3	1.1-3.6	5.9	4.0-7.7
Non-Hodgkin Lymphoma	16.6	16.0-17.2	16.7	16.1-17.3	16.3	13.6-19.0	10.7	8.1-13.4	13.6	10.8-16.3
Oral Cavity & Pharynx	6.6	6.3-7.0	6.8	6.4-7.2	4.3	2.9-5.7	6.1	4.1-8.1	6.4	4.4-8.4
Ovary	12.2	11.8-12.7	12.8	12.2-13.3	7.7	5.9-9.5	7.5	5.5-9.6	7.9	5.9-9.8
Pancreas	11.8	11.3-12.2	11.9	11.4-12.4	14.4	11.9-17.0	8.2	5.8-10.7	8.7	6.3-11.1
Stomach	4.7	4.4-5.0	4.1	3.8-4.4	9.3	7.2-11.4	9.9	7.3-12.5	8.1	5.9-10.3
Thyroid	27.9	27.2-28.7	27.9	27.1-28.8	26.9	23.6-30.2	30.7	26.7-34.7	25.2	22.2-28.3
Urinary Bladder	12.0	11.5-12.4	12.5	12.0-13.1	6.2	4.4-7.9	3.8	2.1-5.5	6.1	4.2-8.1

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000

³ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category. ⁴ Breast *in situ* cases are excluded from 'All Sites'.

* An age-adjusted incidence rate was not calculated when there were fewer than 20 cases.

Source: Massachusetts Cancer Registry

Table 16.
AGE-ADJUSTED¹ INCIDENCE RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2006-2010
TOTAL

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	508.8	506.4-511.1	513.8	511.3-516.3	495.0	483.6-506.5	319.4	308.6-330.2	370.0	359.2-380.8
Brain & Other Nervous System	7.2	6.9-7.5	7.7	7.4-8.1	3.7	2.8-4.6	3.4	2.4-4.5	5.4	4.2-6.6
Breast	73.6	72.7-74.5	76.1	75.1-77.1	64.8	60.7-68.8	43.8	40.1-47.5	49.0	45.3-52.7
Breast <i>in situ</i> ⁴	25.0	24.5-25.5	25.6	25.0-26.2	23.5	21.2-25.9	16.7	14.5-18.9	19.3	17.1-21.5
Bronchus & Lung	70.4	69.5-71.2	73.1	72.1-74.0	59.0	54.9-63.0	42.6	38.3-46.8	33.1	29.6-36.6
Cervix Uteri	-- ⁵	--	--	--	--	--	--	--	--	--
Colon / Rectum	44.2	43.5-44.9	44.1	43.3-44.8	47.6	44.0-51.2	37.9	34.0-41.8	34.4	31.0-37.9
Corpus Uteri & Uterus, NOS	--	--	--	--	--	--	--	--	--	--
Esophagus	6.3	6.1-6.6	6.6	6.3-6.9	5.8	4.5-7.1	3.2	2.1-4.4	3.9	2.7-5.0
Hodgkin Lymphoma	3.3	3.1-3.5	3.6	3.3-3.8	2.9	2.1-3.7	1.2	0.6-1.7	3.6	2.6-4.5
Kidney & Renal Pelvis	16.2	15.8-16.6	16.5	16.0-16.9	18.1	16.0-20.3	8.3	6.5-10.1	12.2	10.3-14.1
Larynx	3.7	3.5-3.9	3.8	3.6-4.0	3.4	2.4-4.3	*	*	3.3	2.3-4.3
Leukemia	12.8	12.4-13.1	13.0	12.5-13.4	9.3	7.7-10.9	8.1	6.4-9.8	8.6	7.0-10.2
Liver & Intrahepatic Bile Ducts	7.6	7.4-7.9	6.6	6.3-6.9	11.3	9.6-13.0	21.4	18.6-24.2	13.0	11.0-14.9
Melanoma of Skin	23.0	22.5-23.5	24.3	23.8-24.9	1.1	0.5-1.7	1.7	0.9-2.4	2.0	1.3-2.7
Multiple Myeloma	5.8	5.6-6.1	5.5	5.2-5.7	13.8	11.8-15.8	3.2	2.1-4.4	7.2	5.5-8.8
Non-Hodgkin Lymphoma	20.4	19.9-20.8	20.6	20.1-21.1	19.0	16.8-21.1	11.6	9.6-13.7	14.8	12.6-16.9
Oral Cavity & Pharynx	11.3	11.0-11.7	11.6	11.2-11.9	9.5	8.0-11.0	8.0	6.4-9.6	10.0	8.2-11.8
Ovary	--	--	--	--	--	--	--	--	--	--
Pancreas	12.8	12.4-13.2	13.0	12.6-13.4	15.1	13.1-17.2	7.6	5.8-9.4	10.5	8.4-12.5
Prostate	--	--	--	--	--	--	--	--	--	--
Stomach	7.0	6.8-7.3	6.4	6.1-6.7	12.4	10.5-14.3	11.7	9.6-13.9	11.9	9.8-13.9
Testis	--	--	--	--	--	--	--	--	--	--
Thyroid	18.9	18.4-19.4	19.0	18.5-19.6	17.4	15.4-19.4	20.2	17.8-22.6	16.1	14.2-18.0
Urinary Bladder	25.4	24.9-25.9	26.6	26.1-27.2	12.8	10.8-14.7	7.8	6.0-9.7	11.0	9.0-13.1

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000

³ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category. ⁴ Breast *in situ* cases are excluded from 'All Sites'.

⁵ Dashes indicate cancers found in only one sex.

Source: Massachusetts Cancer Registry

Table 17.
FIVE LEADING CANCER MORTALITY RATES BY RACE/ETHNICITY AND SEX
Massachusetts, 2006-2010

MALES

AGE-ADJUSTED¹ MORTALITY RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Bronchus & Lung 62.8	Bronchus & Lung 56.7	Bronchus & Lung 33.9	Bronchus & Lung 24.9
2	Prostate 22.0	Prostate 43.5	Liver & Intrahepatic Bile Ducts 18.4	Prostate 15.4
3	Colon/Rectum 18.7	Colon/Rectum 20.8	Colon/Rectum 9.8	Liver & Intrahepatic Bile Ducts 11.2
4	Pancreas 13.0	Liver & Intrahepatic Bile Ducts 14.0	Prostate 6.4	Colon/Rectum 10.6
5	Leukemia 9.9	Pancreas 13.9	Stomach 5.5	Pancreas 9.9

FEMALES

AGE-ADJUSTED¹ MORTALITY RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Bronchus & Lung 44.4	Breast 26.2	Bronchus & Lung 15.1	Bronchus & Lung 12.6
2	Breast 21.4	Bronchus & Lung 24.5	Colon/Rectum 7.8	Colon/Rectum 10.2
3	Colon/Rectum 13.1	Colon/Rectum 14.9	Breast 7.0	Breast 10.1
4	Pancreas 10.3	Pancreas 11.4	Liver & Intrahepatic Bile Ducts 6.0	Pancreas 7.9
5	Ovary 8.4	Corpus Uteri & Uterus, NOS 7.0	Pancreas 5.2	Leukemia 4.2

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000

Source: Massachusetts Vital Statistics

Table 18.
NUMBER AND PERCENTAGE OF DEATHS FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2006-2010
MALES

Cancer Site / Type	All Races ²		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths
All Sites	33812	100	30984	100	1333	100	498	100	716	100
Brain & Other Nervous System	879	2.6	822	2.7	16	1.2	9	1.8	24	3.4
Breast	45	0.1	39	0.1	4	0.3	1	0.2	1	0.1
Bronchus & Lung	9445	27.9	8771	28.3	330	24.8	148	29.7	128	17.9
Colon / Rectum	2839	8.4	2588	8.3	123	9.2	47	9.4	61	8.5
Esophagus	1482	4.4	1395	4.5	45	3.4	17	3.4	18	2.5
Hodgkin Lymphoma	83	0.3	75	0.2	5	0.4	1	0.2	2	0.3
Kidney & Renal Pelvis	837	2.5	786	2.5	24	1.8	9	1.8	15	2.1
Larynx	312	0.9	281	0.9	19	1.4	0	0	9	1.3
Leukemia	1457	4.3	1364	4.4	43	3.2	16	3.2	26	3.6
Liver & Intrahepatic Bile Ducts	1559	4.6	1261	4.1	90	6.8	99	19.9	82	11.5
Melanoma of Skin	689	2.0	681	2.2	1	0.1	2	0.4	4	0.6
Multiple Myeloma	677	2.0	605	2.0	46	3.5	3	0.6	20	2.8
Non-Hodgkin Lymphoma	1236	3.7	1127	3.6	46	3.5	16	3.2	33	4.6
Oral Cavity & Pharynx	646	1.9	575	1.9	30	2.3	22	4.4	9	1.3
Pancreas	2010	5.9	1843	6.0	77	5.8	14	2.8	49	6.8
Prostate	3236	9.6	2950	9.5	190	14.3	21	4.2	59	8.2
Stomach	791	2.3	651	2.1	49	3.7	24	4.8	54	7.5
Testis	24	0.1	22	0.1	0	0	0	0	2	0.3
Thyroid	91	0.3	84	0.3	1	0.1	1	0.2	2	0.3
Urinary Bladder	1369	4.1	1319	4.3	22	1.7	3	0.6	17	2.4
Other Sites	4104	12.1	3744	12.1	172	12.9	45	9	101	14.1

¹ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

² The number of deaths for all races is not the sum of deaths by race/ethnicity.

Source: Massachusetts Vital Statistics

Table 19.
NUMBER AND PERCENTAGE OF DEATHS FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2006-2010
FEMALES

Cancer Site / Type	All Races ²		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths
All Sites	33149	100	30603	100	1256	100	384	100	642	100
Brain & Other Nervous System	681	2.1	641	2.1	9	0.7	4	1.0	16	2.5
Breast	4525	13.7	4114	13.4	239	19.0	42	10.9	94	14.6
Bronchus & Lung	8870	26.8	8444	27.6	206	16.4	78	20.3	88	13.7
Cervix Uteri	260	0.8	218	0.7	22	1.8	7	1.8	9	1.4
Colon / Rectum	3045	9.2	2790	9.1	123	9.8	41	10.7	70	10.9
Corpus Uteri & Uterus, NOS	887	2.7	788	2.6	56	4.5	10	2.6	26	4.1
Esophagus	445	1.3	415	1.4	16	1.3	4	1.0	6	0.9
Hodgkin Lymphoma	65	0.2	60	0.2	1	0.1	0	0	3	0.5
Kidney & Renal Pelvis	531	1.6	499	1.6	18	1.4	3	0.8	6	0.8
Larynx	90	0.3	88	0.3	1	0.1	0	0	1	0.2
Leukemia	1207	3.6	1094	3.6	55	4.4	17	4.4	34	5.3
Liver & Intrahepatic Bile Ducts	686	2.1	579	1.9	35	2.8	33	8.6	26	4.1
Melanoma of Skin	427	1.3	413	1.3	5	0.4	3	0.8	5	0.8
Multiple Myeloma	562	1.7	485	1.6	45	3.6	4	1.0	23	3.6
Non-Hodgkin Lymphoma	1121	3.4	1031	3.4	39	3.1	14	3.7	26	4.1
Oral Cavity & Pharynx	322	1.0	294	1.0	7	0.6	8	2.1	9	1.4
Ovary	1729	5.2	1627	5.3	46	3.7	15	3.9	29	4.5
Pancreas	2273	6.9	2073	6.8	97	7.7	27	7.0	52	8.1
Stomach	552	1.7	466	1.5	41	3.3	13	3.3	20	3.1
Thyroid	111	0.3	102	0.3	4	0.3	2	0.3	3	0.5
Urinary Bladder	626	1.9	589	1.9	26	2.1	3	0.8	7	1.1
Other Sites	4133	12.5	3792	12.4	165	13.1	56	14.6	89	13.9

¹ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

² The number of deaths for all races is not the sum of deaths by race/ethnicity.

Source: Massachusetts Vital Statistics

Table 20.
NUMBER AND PERCENTAGE OF DEATHS FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2006-2010
TOTAL

Cancer Site / Type	All Races ²		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths
All Sites	66961	100	61587	100	2589	100	882	100	1358	100
Brain & Other Nervous System	1560	2.3	1463	2.4	25	1.0	13	1.5	40	3
Breast	4570	6.82	4153	6.7	243	9.4	43	4.9	95	7
Bronchus & Lung	18315	27.4	17215	27.9	536	20.7	226	25.6	216	15.9
Cervix Uteri	260	0.4	218	0.3	22	0.9	7	0.8	9	0.7
Colon / Rectum	5884	8.8	5378	8.7	246	9.5	88	10.0	131	9.7
Corpus Uteri & Uterus, NOS	887	1.3	788	1.3	56	2.2	10	1.1	26	1.9
Esophagus	1927	2.9	1810	2.9	61	2.4	21	2.4	24	1.8
Hodgkin Lymphoma	148	0.2	135	0.2	6	0.2	1	0.1	5	0.4
Kidney & Renal Pelvis	1368	2.0	1285	2.1	42	1.6	12	1.4	21	1.6
Larynx	402	0.6	369	0.6	20	0.8	0	0	10	0.7
Leukemia	2664	4.0	2458	4.0	98	3.8	33	3.7	60	4.4
Liver & Intrahepatic Bile Ducts	2245	3.3	1840	3.0	125	4.8	132	15.0	108	8
Melanoma of Skin	1116	1.7	1094	1.8	6	0.2	5	0.6	9	0.7
Multiple Myeloma	1239	1.9	1090	1.8	91	3.5	7	0.8	43	3.2
Non-Hodgkin Lymphoma	2357	3.5	2158	3.5	85	3.3	30	3.4	59	4.3
Oral Cavity & Pharynx	968	1.5	869	1.4	37	1.4	30	3.4	18	1.3
Ovary	1730	2.6	1628	2.6	46	1.8	15	1.7	29	2.1
Pancreas	4283	6.4	3916	6.4	174	6.7	41	4.7	101	7.4
Prostate	3237	4.8	2951	4.8	190	7.3	21	2.4	59	4.3
Stomach	1343	2.0	1117	1.8	90	3.5	37	4.2	74	5.5
Testis	24	0.1	22	0.0	0	0	0	0	2	0.1
Thyroid	202	0.3	186	0.3	5	0.2	3	0.3	5	0.4
Urinary Bladder	1995	3.0	1908	3.1	48	1.9	6	0.7	24	1.8
Other Sites	8237	12.3	7536	12.2	337	13.0	101	11.5	190	14

¹ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

² The number of deaths for all races is not the sum of deaths by race/ethnicity.

Source: Massachusetts Vital Statistics

Table 21.
AGE-ADJUSTED¹ MORTALITY RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2006-2010
MALES

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	218.9	216.6-221.3	222.5	220.0-225.0	237.3	224.5-250.0	107.2	97.8-116.6	128.2	118.8-137.6
Brain & Other Nervous System	5.4	5.1-5.8	5.8	5.4-6.2	*	*	*	*	3.7	2.2-5.2
Breast	0.3	0.2-0.4	0.3	0.2-0.4	*	*	*	*	*	*
Bronchus & Lung	61.0	59.8-62.3	62.8	61.4-64.1	56.7	50.6-62.8	33.9	28.4-39.4	24.9	20.6-29.2
Colon / Rectum	18.5	17.8-19.2	18.7	18.0-18.4	20.8	17.1-24.4	9.8	7.0-12.7	10.6	8.0-13.3
Esophagus	9.2	8.7-9.7	9.7	9.2-10.2	6.8	4.8-8.8	*	*	*	*
Hodgkin Lymphoma	0.5	0.4-0.6	0.5	0.4-0.7	*	*	*	*	*	*
Kidney & Renal Pelvis	5.3	4.9-5.7	5.5	5.1-5.9	4.5	2.7-6.4	*	*	*	*
Larynx	2.0	1.7-2.2	2.0	1.7-2.2	*	*	*	*	*	*
Leukemia	9.5	9.0-10.0	9.9	9.4-10.5	7.7	5.4-10.0	*	*	4.0	2.5-5.6
Liver & Intrahepatic Bile Ducts	9.5	9.0-10.0	8.6	8.1-9.1	14.0	11.1-16.9	18.4	14.8-22.1	11.2	8.8-13.6
Melanoma of Skin	4.4	4.1-4.7	4.9	4.5-5.2	*	*	*	*	*	*
Multiple Myeloma	4.4	4.1-4.8	4.4	4.0-4.7	7.6	5.4-9.8	*	*	4.3	2.4-6.3
Non-Hodgkin Lymphoma	8.1	7.6-8.5	8.2	7.7-8.7	7.6	5.4-9.9	*	*	5.1	3.3-6.8
Oral Cavity & Pharynx	4.0	3.7-4.3	4.0	3.6-4.3	4.6	2.9-6.2	3.5	2.0-5.0	*	*
Pancreas	13.0	12.2-13.4	13.0	12.4-13.6	13.9	10.8-17.0	*	*	9.9	7.1-12.6
Prostate	22.2	21.4-23.0	22.0	21.2-22.8	43.5	37.3-49.7	6.4	3.7-9.1	15.4	11.4-19.3
Stomach	5.1	4.7-5.5	4.7	4.3-5.0	9.1	6.5-11.6	5.5	3.3-7.8	8.8	6.5-11.2
Testis	0.1	0.1-0.2	0.2	0.1-0.2	*	*	*	*	*	*
Thyroid	0.6	0.5-0.7	0.6	0.5-0.7	*	*	*	*	*	*
Urinary Bladder	9.2	8.7-9.7	9.7	9.2-10.2	3.9	2.3-5.5	*	*	*	*

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000

³ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

*An age-adjusted mortality rate was not calculated when there were fewer than 20 deaths.

Source: Massachusetts Vital Statistics

Table 22.
AGE-ADJUSTED¹ MORTALITY RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2006-2010
FEMALES

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	151.9	150.3-153.5	155.7	153.9-157.4	146.7	138.6-154.8	68.9	62.0-75.8	86.3	79.6-93.0
Brain & Other Nervous System	3.3	3.1-3.6	3.6	3.3-3.8	*	*	*	*	*	*
Breast	21.1	20.4-21.7	21.4	20.8-22.1	26.2	22.8-29.5	7.0	4.9-9.2	10.1	8.0-12.1
Bronchus & Lung	41.9	41.0-42.8	44.4	43.5-45.4	24.5	21.2-27.8	15.1	11.7-18.4	12.6	10.0-15.2
Cervix Uteri	1.3	1.1-1.5	1.2	1.1-1.4	2.5	1.4-3.5	*	*	*	*
Colon / Rectum	13.0	12.6-13.5	13.1	12.5-13.5	14.9	12.3-17.5	7.8	5.4-10.1	10.2	7.8-12.6
Corpus Uteri & Uterus, NOS	4.1	3.9-4.4	4.1	3.8-4.3	7.0	5.2-8.8	*	*	3.7	2.3-5.2
Esophagus	2.0	1.8-2.2	2.1	1.9-2.3	*	*	*	*	*	*
Hodgkin Lymphoma	0.3	0.2-0.4	0.4	0.3-0.4	*	*	*	*	*	*
Kidney & Renal Pelvis	2.4	2.2-2.6	2.5	2.2-2.7	*	*	*	*	*	*
Larynx	0.4	0.3-0.5	0.5	0.4-0.6	*	*	*	*	*	*
Leukemia	5.6	5.2-5.9	5.6	5.3-5.9	6.4	4.7-8.1	*	*	4.2	2.8-5.6
Liver & Intrahepatic Bile Ducts	3.2	3.0-3.4	3.0	2.8-3.2	3.9	2.6-5.2	6.0	3.9-8.0	4.2	2.6-5.8
Melanoma of Skin	2.0	1.8-2.2	2.2	2.0-2.4	*	*	*	*	*	*
Multiple Myeloma	2.5	2.3-2.8	2.4	2.2-2.6	5.6	4.0-7.2	*	*	3.3	2.0-4.7
Non-Hodgkin Lymphoma	4.8	4.6-5.1	4.9	4.6-5.2	4.8	3.3-6.3	*	*	3.8	2.4-5.3
Oral Cavity & Pharynx	1.5	1.3-1.6	1.5	1.3-1.7	*	*	*	*	*	*
Ovary	8.0	7.6-8.4	8.4	8.0-8.8	5.2	3.7-6.7	*	*	3.6	2.3-4.9
Pancreas	10.2	9.8-10.7	10.3	9.9-10.8	11.4	9.1-13.7	5.2	3.3-7.2	7.9	5.7-10.0
Stomach	2.4	2.2-2.6	2.2	2.0-2.4	4.9	3.4-6.3	*	*	2.6	1.5-3.8
Thyroid	0.5	0.4-0.6	0.5	0.4-0.6	*	*	*	*	*	*
Urinary Bladder	2.6	2.4-2.8	2.7	2.5-2.9	3.3	2.1-4.6	*	*	*	*

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000

³ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

* An age-adjusted mortality rate was not calculated when there were fewer than 20 deaths.

Table 23.
AGE-ADJUSTED¹ MORTALITY RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2006-2010
TOTAL

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	178.0	176.7-179.4	181.6	180.1-183.0	180.1	173.2-187.1	86.3	80.6-92.0	103.8	98.3-109.3
Brain & Other Nervous System	4.3	4.0-4.5	4.6	4.3-4.8	1.5	0.9-2.1	*	*	2.3	1.6-3.1
Breast	12.0	11.7-12.4	12.2	11.8-12.6	15.4	13.4-17.3	3.9	2.7-5.0	5.7	4.5-6.8
Bronchus & Lung	49.6	48.9-50.4	51.8	51.0-52.6	37.3	34.2-40.4	23.6	20.5-26.7	17.7	15.4-20.1
Cervix Uteri	-	-	-	-	-	-	-	-	-	-
Colon / Rectum	15.3	14.9-15.7	15.4	15.0-15.8	17.5	15.3-19.7	8.8	7.0-10.7	10.5	8.7-12.3
Corpus Uteri & Uterus, NOS	-	-	-	-	-	-	-	-	-	-
Esophagus	5.2	4.9-5.4	5.4	5.2-5.6	3.9	2.9-4.9	2.0	1.2-2.9	1.8	1.1-2.5
Hodgkin Lymphoma	0.4	0.3-0.5	0.4	0.4-0.5	*	*	*	*	*	*
Kidney & Renal Pelvis	3.6	3.4-3.8	3.7	3.5-3.9	2.9	2.0-3.8	*	*	1.4	0.8-2.0
Larynx	1.1	1.0-1.2	1.1	1.0-1.2	1.3	0.7-1.9	*	*	*	*
Leukemia	7.1	6.8-7.4	7.3	7.0-7.6	6.8	5.4-8.1	2.9	1.9-3.9	4.2	3.1-5.2
Liver & Intrahepatic Bile Ducts	6.0	5.7-6.2	5.5	5.2-5.7	8.1	6.7-9.5	11.9	9.9-14.0	7.4	6.1-8.9
Melanoma of Skin	3.0	2.8-3.2	3.3	3.1-3.5	*	*	*	*	*	*
Multiple Myeloma	3.3	3.1-3.5	3.2	3.0-3.4	6.4	5.1-7.7	*	*	3.7	2.6-4.8
Non-Hodgkin Lymphoma	6.2	5.9-6.4	6.2	5.9-6.4	6.0	4.7-7.2	2.8	1.8-3.9	4.4	3.3-5.5
Oral Cavity & Pharynx	2.6	2.4-2.7	2.5	2.4-2.8	2.4	1.6-3.1	2.4	1.5-3.2	*	*
Ovary	-	-	-	-	-	-	-	-	-	-
Pancreas	11.4	11.0-11.7	11.5	11.2-11.9	12.2	10.4-14.1	4.3	3.0-5.7	8.8	7.0-10.5
Prostate	-	-	-	-	-	-	-	-	-	-
Stomach	3.5	3.3-3.7	3.2	3.0-3.4	6.5	5.2-7.9	3.5	2.4-4.7	5.3	4.1-6.5
Testis	-	-	-	-	-	-	-	-	-	-
Thyroid	0.5	0.5-0.6	0.6	0.5-0.6	*	*	*	*	*	*
Urinary Bladder	5.2	4.9-5.4	5.4	5.2-5.6	3.7	2.6-4.7	*	*	2.3	1.4-3.3

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000

³ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

Table 24.
INCIDENCE RATES¹ FOR SELECTED CANCER SITES BY SEX
Massachusetts and U.S. (2006-2010)

Cancer Site / Type	MALES				FEMALES			
	Massachusetts		United States		Massachusetts		United States	
	Rate	95% CL	Rate	95% CL+	Rate	95% CL	Rate	95% CL+
All Sites	577.8*	574.0-581.6	542.3	541.7-542.6	463.9*	460.9-467.0	418.8	418.3-419.0
Brain & Other Nervous System	8.4*	7.9-8.9	7.4	7.3-7.4	6.3*	5.9-6.6	5.2	5.1-5.2
Breast	1.3	1.2-1.5	1.4	1.4-1.4	134.8*	133.2-136.5	122.2	121.9-122.3
Breast <i>in situ</i>²	0.2	0.1-0.2	0.2	0.2-0.2	47.0*	46.0-48.0	30.9	30.8-31.0
Bronchus & Lung	79.5	78.0-80.9	80.0	79.8-80.1	64.7*	63.5-65.8	55.1	54.9-55.2
Cervix Uteri	--	--	-	-	5.6*	5.3-6.0	8.0	7.9-8.0
Colon / Rectum	50.8*	49.7-51.9	51.7	53.8-54.1	39.2	38.3-40.0	39.1	38.9-39.2
Corpus Uteri & Uterus, NOS	--	--	-	-	30.1*	29.4-30.9	23.8	23.7-23.9
Esophagus	11.1*	10.6-11.7	8.5	8.4-8.5	2.5*	2.3-2.8	1.9	1.9-1.9
Hodgkin Lymphoma	3.7*	3.4-4.0	3.2	3.2-3.2	3.0*	2.7-3.2	2.5	2.5-2.5
Kidney & Renal Pelvis	22.6*	21.8-23.3	21.4	21.3-21.5	11.1	10.6-11.5	11.2	11.1-11.2
Larynx	6.4	6.0-6.8	6.6	6.5-6.6	1.6	1.4-1.8	1.4	1.4-1.4
Leukemia	16.5	15.9-17.2	16.5	16.4-16.6	10.1	9.6-10.6	10.1	10.0-10.1
Liver & Intrahepatic Bile Ducts	12.6*	12.0-13.1	10	9.9-10.0	3.6*	3.3-3.8	3.1	3.1-3.1
Melanoma of Skin	28.3*	27.5-29.2	24.7	24.6-24.8	19.4*	18.8-20.1	15.6	15.5-15.7
Multiple Myeloma	7.5	7.1-7.9	7.4	7.3-7.4	4.6	4.3-4.9	4.8	4.8-4.8
Non-Hodgkin Lymphoma	25.2*	24.5-26.0	23.3	23.2-23.4	16.6*	16.0-17.2	16.3	16.2-16.4
Oral Cavity & Pharynx	16.9	16.3-17.5	16.5	16.4-16.6	6.6*	6.3-7.0	6.2	6.1-6.2
Ovary	--	--	-	-	12.2	11.8-12.7	12.3	12.2-12.3
Pancreas	14.1	13.5-14.7	13.7	13.6-13.8	11.8*	11.3-12.2	10.7	10.6-10.7
Prostate	156.8*	154.9-158.8	146.6	146.3-146.8	--	--	--	-
Stomach	10.2*	9.7-10.7	9.4	9.3-9.4	4.7	4.4-5.0	4.7	4.7-4.7
Testis	6.1*	5.7-6.5	5.5	5.4-5.5	--	--	--	-
Thyroid	9.4*	8.9-9.9	6.3	6.2-6.3	27.9*	27.2-28.7	18.5	18.4-18.6
Urinary Bladder	44.4*	43.3-45.5	36.9	36.7-37.0	12.0*	11.5-12.4	9.1	9.0-9.1

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² Breast *in situ* cases are excluded from "All Sites" and from breast cancer counts.

* indicates that the Massachusetts incidence rate differed significantly from the national rate ($p < 0.05$).

+ Some of the national confidence limits were quite small and could only be differentiated when taken to the second decimal point. Since this report only has figures with one decimal point, some lower and upper confidence limits may be appear to be the same when in fact they differ at the second decimal point.

Sources: Massachusetts Cancer Registry and the North American Association of Central Cancer Registries (NAACCR).

Table 25.
MORTALITY RATES¹ FOR SELECTED CANCER SITES BY SEX
Massachusetts and U.S. (2006-2010)

Cancer Site / Type	MALES				FEMALES			
	Massachusetts		United States		Massachusetts		United States	
	Rate	95% CL	Rate	95% CL+	Rate	95% CL	Rate	95% CL+
All Sites	218.9*	216.6-221.3	215.3	214.9-215.5	151.9*	150.3-153.5	149.7	149.4-149.8
Brain & Other Nervous System	5.4	5.1-5.8	5.2	5.1-5.2	3.3	3.1-3.6	3.5	3.4-3.5
Breast	0.3	0.2-0.4	0.3	0.3-0.3	21.1*	20.4-21.7	22.6	22.5-22.7
Bronchus & Lung	61.0*	59.8-62.3	63.5	63.3-63.6	41.9*	41.0-42.8	39.2	39.1-39.3
Cervix Uteri	-	-	-	-	1.3*	1.1-1.5	2.4	2.3-2.4
Colon / Rectum	18.5*	17.8-19.2	19.6	19.5-19.7	13.0*	12.6-13.5	13.9	13.8-13.9
Corpus Uteri & Uterus, NOS	-	-	-	-	4.1	3.9-4.4	4.3	4.3-4.3
Esophagus	9.2*	8.7-9.7	7.6	7.5-7.6	2.0*	1.8-2.2	1.6	1.5-1.6
Hodgkin Lymphoma	0.5	0.4-0.6	0.5	0.5-0.5	0.3	0.2-0.4	0.3	0.3-0.3
Kidney & Renal Pelvis	5.3	4.9-5.7	5.8	5.7-5.8	2.4	2.2-2.6	2.6	2.5-2.6
Larynx	2.0	1.7-2.2	2.0	2.0-2.0	0.4	0.3-0.5	0.4	0.4-0.4
Leukemia	9.5	9.0-10.0	9.5	9.4-9.5	5.6	5.2-5.9	5.3	5.2-5.3
Liver & Intrahepatic Bile Ducts	9.5*	9.0-10.0	6.8	6.7-6.8	3.2*	3.0-3.4	2.2	2.1-2.2
Melanoma of Skin	4.4	4.1-4.7	4.1	4.1-4.1	2.0*	1.8-2.2	1.7	1.7-1.7
Multiple Myeloma	4.4	4.1-4.8	4.3	4.2-4.3	2.5	2.3-2.8	2.7	2.7-2.7
Non-Hodgkin Lymphoma	8.1	7.6-8.5	8.2	8.1-8.2	4.8	4.6-5.1	5.1	5.0-5.1
Oral Cavity & Pharynx	4.0	3.7-4.3	3.8	3.8-3.8	1.5	1.3-1.6	1.4	1.4-1.4
Ovary	-	-	-	-	8.0	7.6-8.4	8.1	8.0-8.1
Pancreas	13	12.2-13.4	12.5	12.4-12.5	10.2*	9.8-10.7	9.6	9.5-9.6
Prostate	22.2	21.4-23.0	23	22.9--23.1	-	-		
Stomach	5.1	4.7-5.5	4.9	4.8-4.9	2.4	2.2-2.6	2.5	2.4-2.5
Testis	0.1	0.1-0.2	0.2	0.2-0.2	-	-		
Thyroid	0.6	0.5-0.7	0.5	0.5-0.5	0.5	0.4-0.6	0.5	0.5-0.5
Urinary Bladder	9.2*	8.7-9.7	7.7	7.6-7.7	2.6*	2.4-2.8	2.2	2.1-2.2

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² Breast *in situ* cases are excluded from "All Sites" and from breast cancer counts.

* indicates that the Massachusetts mortality rate differed significantly from the national rate ($p < 0.05$).

Data Sources: Massachusetts: Massachusetts Vital Statistics and United States: National Center for Health Statistics (NCHS).

+ Some of the national confidence limits were quite small and could only be differentiated when taken to the second decimal point. Since this report only has figures with one decimal point, some lower and upper confidence limits may be appear to be the same when in fact they differ at the second decimal point.

Sources: Massachusetts Vital Statistics and the National Center for Health Statistics.

APPENDICES

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APPENDIX I

ICD CODES USED FOR THIS REPORT

Cancer Site/TypeC o d e s.....	
	ICD-O-3*	ICD-10**
Brain & Other Nervous System	C70.0-C72.9 except 9590-9989	C70-C72
Breast (includes <i>in situ</i>)	C50.0 – C50.9 except 9590 -9989	C50
Bronchus & Lung	C34.0 – C34.9 except 9590-9989	C34
Cervix Uteri	C53.0 – C53.9 except 9590-9989	C53
Colon/ Rectum	C18.0-C18.9, C19.9, C20.9, C26.0 except 9590-9989	C18 – C20, C26.0
Corpus Uteri & Uterus, NOS	C54.0 – C54.9, C55.9 except 9590 – 9989	C54 – C55
Esophagus	C15.0-C15.9 except 9590 – 9989	C15
Hodgkin Lymphoma	C00.00 – C80.9 (includes 9650-9667)	C81
Kidney & Renal Pelvis	C64.9, C65.9 except 9590-9989	C64- C65
Larynx	C32.0 – C32.9 except 9590- 9989	C32
Leukemia	C00.0 – C80.9 (includes 9733, 9742, 9800 – 9820, 9826, 9831 – 9948, 9963 – 9964) C42.0, C42.1, C42.4 (includes 9823, 9827)	C90.1, C91 – C95
Liver and Intrahepatic Bile Ducts	C22.0, C22.1 except 9590 – 9989	C22

Cancer Site/ TypeC o d e s.....	
	ICD-O-3*	ICD-10**
Melanoma of Skin	C44.0 – C44.9 (includes 8720-8790)	C43
Multiple Myeloma	C00.0-C80.9 (includes 9731, 9732, 9734)	C90.0, C90.2
Non – Hodgkin Lymphoma	C00.0 – C80.9 (includes 9590 – 9596, 9670 – 9729) All sites except C42.0, C42.1, C42.4 (includes 9823, 9827)	C82 – C85, C96.3
Oral Cavity & Pharynx	C00.0 – C14.8 except 9590 – 9989	C00 – C14
Ovary	C56.9 except 9590- 9989	C56
Pancreas	C25.0 – C25.9 except 9590 – 9989	
Prostate	C61.9 except 9590 – 9989	C61
Stomach	C16.0 – C16.9 except 9590- 9989	C16
Testis	C62.0 – C62.9 except 9590 – 9989	C62
Thyroid	C73.9 except 9590 – 9989	C73
Urinary Bladder (includes <i>in situ</i>)	C67.0 – C67.9 except 9590 – 9989	C67

* *International Classification of Diseases for Oncology, 3d Ed.* (1) (includes codes added since publication) for incidence data

** *International Classification of Diseases, Tenth Revision* (3) (includes codes added since publication) for mortality data

APPENDIX II

Population and Rate Changes

The population estimates for 2006-2010 that were used in this report were produced by the National Center for Health Statistics (NCHS) in collaboration with the U.S. Census Bureau's Population Estimation Program. The NCHS takes the Census Bureau population estimates file and reallocates the multiple race categories required by the 1997 Office of Management and Budget (OMB) specifications back into the four race categories specified in the 1977 OMB specifications so that the estimates will be compatible with previous years' populations. (10) The estimates are divided into mutually exclusive racial/ethnic categories similar to those of the MCR.

Please note that the statewide age-adjusted rates published in this report cannot be compared with those published in reports prior to July 2007 because the overall population count and the age distribution of the population, which were based on the Census 2000 count, differ.

The difference in the new population estimates is pronounced for Hispanics and black, non-Hispanics. The Hispanic and black, non-Hispanic populations have increased 15% since 2000, while the overall state population has increased by 1%. It is important to remember that both age-adjusted cancer incidence and cancer death rates are not a measure of the actual risk of cancer or of death from it. Rather, age-adjusted rates are summary measures used to compare cancer incidence and mortality trends over time or among different populations whose age distributions differ. For specific examples of the effect of new population estimates on age-adjusted rates, see Appendix II in the report *Cancer Incidence and Mortality in Massachusetts 2000-2004: Statewide Report*, available at www.mass.gov/dph/mcr.

Appendix III

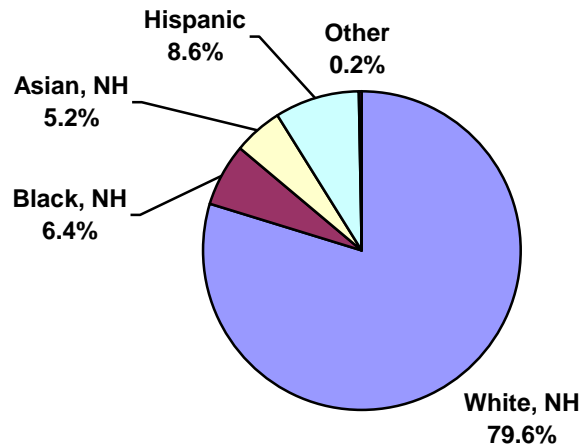
POPULATION ESTIMATES BY AGE, RACE/ETHNICITY, AND SEX Massachusetts, 2006-2010

Age Group	White, non-Hispanic			Black, non-Hispanic			Asian, non-Hispanic			Males	Hispanic	
	Males	Females	Total	Males	Females	Total	Males	Females	Total		Females	Total
00-04	673,126	643,810	1,316,936	88,438	84,766	173,204	64,286	62,512	126,798	142,286	137,183	279,469
05-09	715,389	684,409	1,399,798	81,081	78,066	159,147	57,491	58,483	115,974	129,185	124,368	253,553
10-14	774,030	733,722	1,507,752	81,877	78,307	160,184	51,005	52,516	103,521	125,670	119,702	245,372
15-19	865,492	845,635	1,711,127	94,169	92,485	186,654	57,285	60,285	117,570	135,459	129,267	264,726
20-24	850,977	862,843	1,713,820	90,929	90,310	181,239	68,331	76,397	144,728	132,774	124,364	257,138
25-29	770,924	773,513	1,544,437	82,541	79,895	162,436	80,034	86,507	166,541	139,241	124,096	263,337
30-34	729,503	737,749	1,467,252	72,018	75,116	147,134	87,162	90,130	177,292	126,883	119,810	246,693
35-39	839,601	867,417	1,707,018	71,225	77,373	148,598	84,380	83,007	167,387	109,845	112,328	222,173
40-44	978,146	1,010,470	1,988,616	74,243	79,585	153,828	67,660	68,787	136,447	98,873	102,700	201,573
45-49	1,067,514	1,101,477	2,168,991	71,762	76,177	147,939	55,915	57,572	113,487	79,852	87,231	167,083
50-54	1,001,539	1,050,065	2,051,604	60,185	63,928	124,113	44,625	47,814	92,439	59,515	66,860	126,375
55-59	881,971	936,147	1,818,118	45,492	52,040	97,532	35,144	38,419	73,563	42,298	50,167	92,465
60-64	713,111	777,898	1,491,009	31,813	40,070	71,883	24,202	26,456	50,658	29,360	36,540	65,900
65-69	500,253	575,210	1,075,463	21,428	29,269	50,697	18,191	19,626	37,817	19,089	24,702	43,791
70-74	380,632	470,988	851,620	15,597	22,912	38,509	13,570	15,061	28,631	12,297	18,011	30,308
75-79	317,590	441,920	759,510	10,628	17,458	28,086	9,010	11,100	20,110	8,236	12,287	20,523
80-84	241,390	398,274	639,664	6,661	12,983	19,644	5,339	7,463	12,802	5,059	8,074	13,133
85+	195,974	469,800	665,774	4,943	11,773	16,716	4,046	6,522	10,568	4,374	8,319	12,693

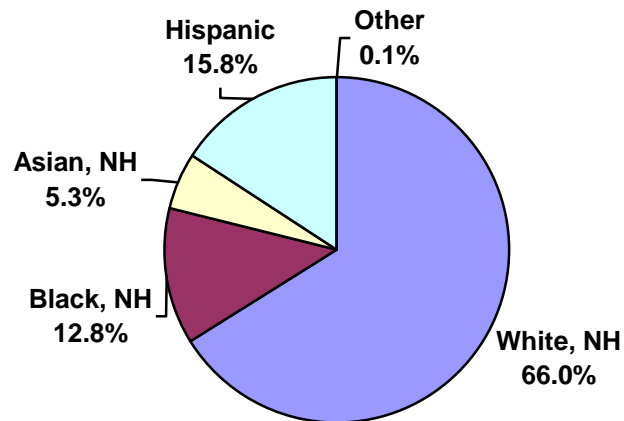
Population Data Source: United States Census Data (2006-2010)

Appendix IV
Racial/Ethnic Breakdown of the Massachusetts and NAACCR Populations, 2006-2010

Massachusetts



NAACCR



Data Source: United States Census Data, 2006-2010

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REFERENCES

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REFERENCES

1. Fritz A, Percy C, Jack A, Sobin LH, eds. *International Classification of Diseases for Oncology*, 3rd Ed. Geneva: World Health Organization, 2000.
2. Copeland G, Lake A, Firth R, *et al.*, eds. *Cancer in North America: 2006-2010. Volume One: Combined Cancer Incidence for the United States and Canada*. Springfield, IL: North American Association of Central Cancer Registries, 2013.
3. World Health Organization. *International Statistical Classification of Diseases and Related Health Problems*, Tenth Revision. Geneva: World Health Organization, 1992.
4. Edwards, B, Noone, A, Mariotto, A *et al.* Annual report to the nation on the status of cancer, 1975-2010, featuring Prevalence of Comorbidity and Impact on Survival among Persons with Lung, Colorectal, Breast, or Prostate Cancer. *Journal of the National Cancer Institute* 2013; 105(3):175-201.
5. Ries LAG, Melbert D, Krapcho M, *et al.*, eds. *SEER Cancer Statistics Review*, 1975-2004 [report online]. Bethesda, MD: National Cancer Institute, 2007. Available at: http://seer.cancer.gov/csr/1975_2004/. Accessed March 18, 2008.
6. Clegg LX, Feuer EJ, Midthune DN, Fay MP, Hankey BF. Impact of reporting delay and reporting error on cancer incidence rates and trends. *Journal of the National Cancer Institute* 2002;94:1537-1545.
7. Centers for Disease Control and Prevention, Hepatocellular Carcinoma- United States, 2001-2006. Available at <http://www.cdc.gov/media/mmwrnews/2010/n100506.htm> Accessed June 7, 2011.
8. Pollack H, Wan K, Ramos, R, *et al.* Screening for chronic hepatitis B among Asian/Pacific Islander populations-New York City, 2005. *MMWR* 2006; 55:505-509.
9. Copeland G, Lake A, Firth R, *et al.*, eds. *Cancer in North America: 2006-2010. Volume Three: Registry-Specific Cancer Mortality in the United States*. Springfield, IL: North American Association of Central Cancer Registries, 2013.
10. National Center for Health Statistics, U.S. Department of Health and Human Services. Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, United States July 1st resident population by state, county, age, sex, bridged-race, and Hispanic origin, compiled from 1990-1999 bridged-race intercensal population estimates and 2000-2009 (Vintage 2009) bridged-race postcensal population estimates. Available at: http://www.cdc.gov/nchs/nvss/bridged_race.htm Accessed August 28, 2012.